STEVE MARTIN GETS FUNNY (p. 64) ~ **SHOP LIKE A MEDICI** (p. 78)

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{ FEBRUARY 2008 }

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Smithsonian features

{ FEBRUARY 2008 · VOLUME 38, NUMBER 11 }

The story these photographs tell is of the will of African-Americans who allowed no legal, physical or psychological depredations to suppress the joy and artistry inside them—and who changed the world in the process.

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At this centuries-old Florentine pharmacy started by Dominican monks, you can find everything from traditional elixirs to signature soaps and sachets
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How did a noted Dutch-born naturalist and scientist become, according to Brazilian authorities, a rain forest criminal?
BY JOSHUA HAMMER / PHOTOGRAPHS BY CLAUDIO EDINGER

THIS PAGE: "We got no routine, we just act the way the spirit moves us," Lionel Hampton (here, in 1937) once said about his band. Andre Da Miano / NPG, SI

COVER: The Parthenon was built in less than a decade, but restoring it has taken 33 years—so far. Petros Giannakouris / AP Images

Smithsonian departments

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I stood on a cliff and watched humpbacks breach in the waters below. Improbably, given their mass and bulk, they seemed to hover above the sea before crashing backward.

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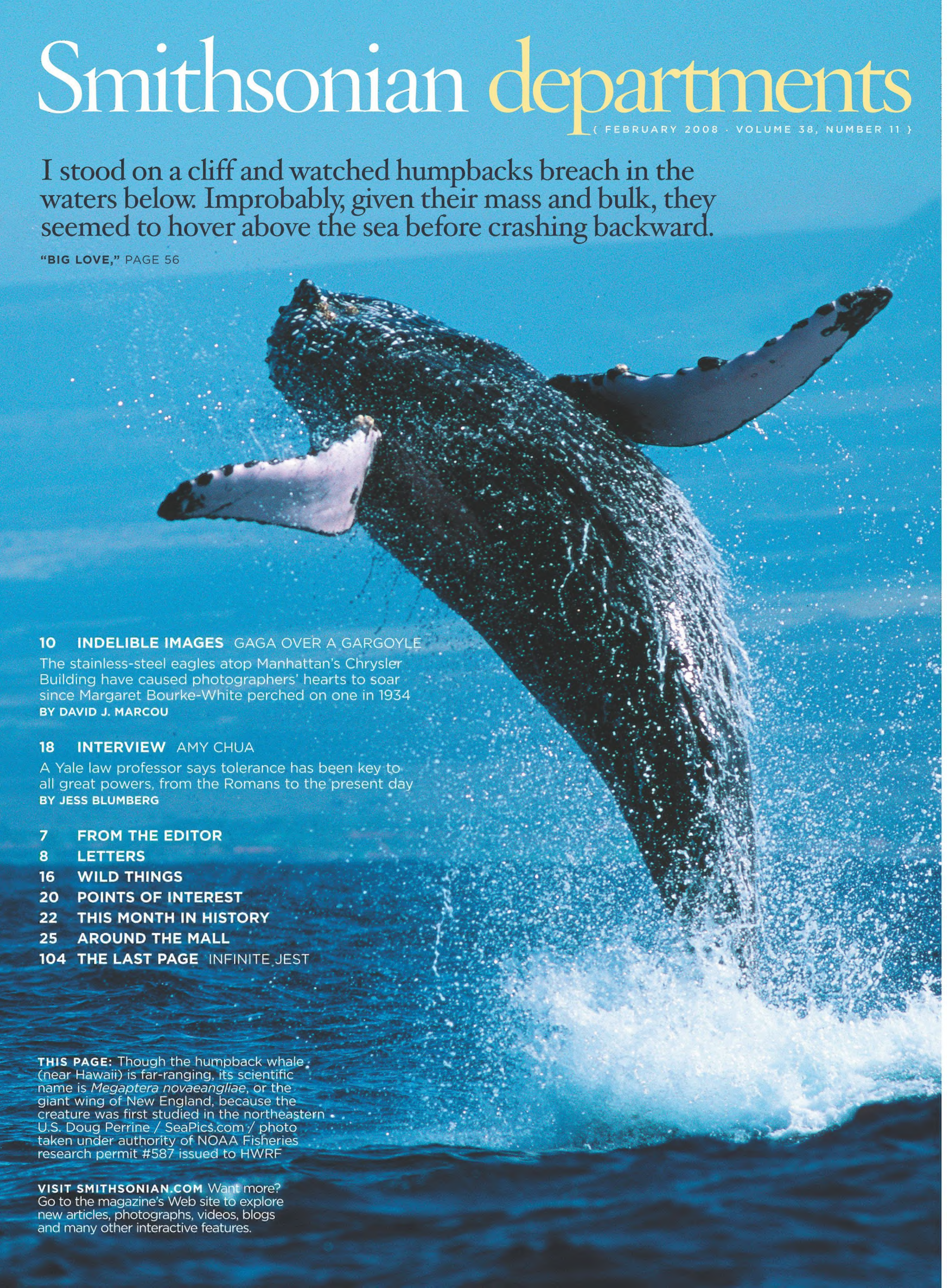

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THIS PAGE: Though the humpback whale (near Hawaii) is far-ranging, its scientific name is *Megaptera novaeangliae*, or the giant wing of New England, because the creature was first studied in the northeastern U.S. Doug Perrine / SeaPics.com / photo taken under authority of NOAA Fisheries research permit #587 issued to HWRF

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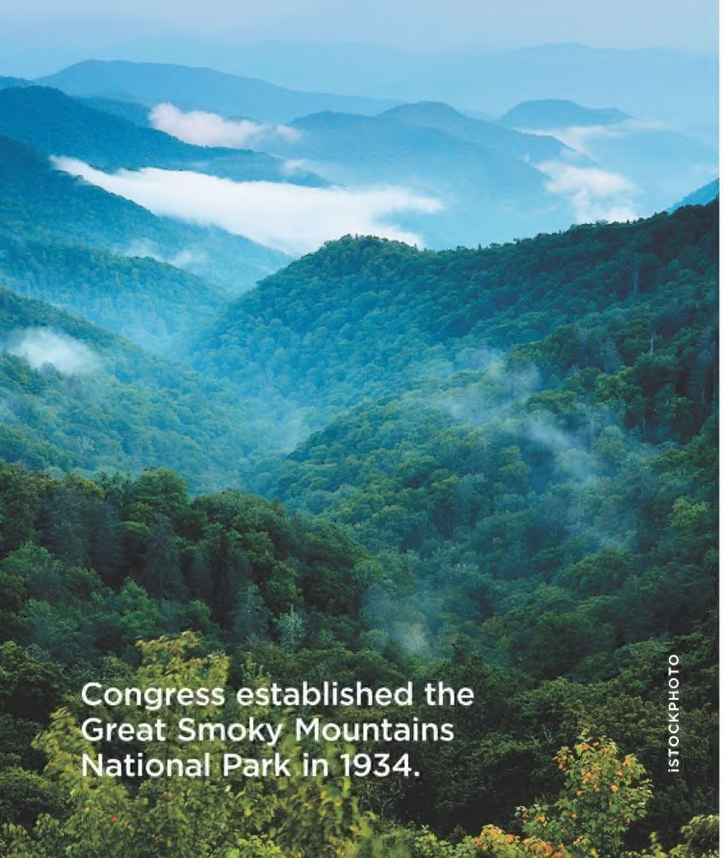

Congress established the Great Smoky Mountains National Park in 1934.

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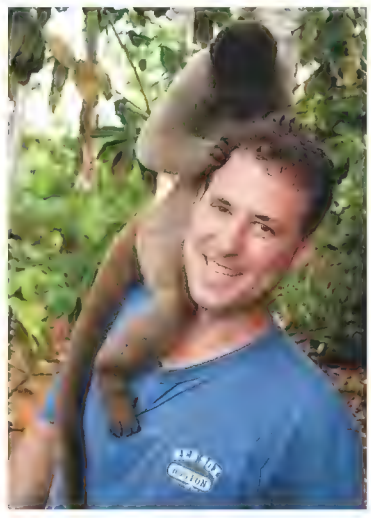
FROM THE EDITOR

Bound & Determined

Reflecting on resistance

BY CAREY WINFREY

JOSHUA HAMMER was in Brazil for SMITHSONIAN in the fall of 2006 when he heard about some legal problems a noted Dutch-born primatologist was having there. He made a mental note and moved on to other assignments. Many months later, Hammer read in the *New York Times* that the scientist, Marc van Roosmalen, had been found guilty on charges stemming from Brazil's strict biopiracy laws and sentenced to prison. Hammer e-mailed him, suggesting a story. "I didn't really think he would want to cooperate because it was so legally sensitive. But he's not the type of guy, as I learned later, who likes to keep his mouth shut."



Hammer: "The experience had traumatized him."

While reporting "Trials of a Primatologist" (p. 82), Hammer, accompanied by photographer Claudio Edinger, spent three days with the scientist, awaiting appeal, on a boat plying the Rio Negro, a tributary of the Amazon. "Van Roosmalen was really engaged in the forests, very talkative," Hammer recalls. "I could definitely see what made him such a great naturalist. But it also became clear that the [legal] experience had traumatized him."

As for van Roosmalen's guilt or innocence, "it's complicated," Hammer says. "Some people believe that he has been completely railroaded by the Brazilian government and treated unfairly. But those who know him best say that he really sabotaged himself and that nobody goes to jail for 14 years in Brazil—certainly nobody of his stature—for no reason." Judge for yourself.

Moore: "It becomes inspiring. I was exhilarated at the end."

THE EXHIBITION of African-American portraits at the Smithsonian's National Portrait Gallery in Washington, D.C. is titled "Let Your Motto Be Resistance." At first that puzzled Associate Editor Lucinda Moore, who wrote our story, "Portraits of Resistance," on page 72. "You look at some of the photographs and it's not immediately clear how everybody resisted," says Moore. "The opening image of Sarah Vaughan is almost ethereal. It looks as if she is about to lift off into the heavens. But one of the things that Lonnie Bunch"—director of the National Museum of African American History and Culture, whose inaugural exhibition this is—"said to me is that sometimes survival can be the highest form of resistance. When you consider the subjects' biographies and what they went through to accomplish the things they did despite the oppression and the odds against them—and what they were able to contribute to America—it becomes inspiring. I was exhilarated after seeing it."

CLAUDIO EDINGER; BRENDAN MCCABE

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LETTERS READERS RESPOND TO THE **DECEMBER** ISSUE

On the morning of June 6, 1944 ("Ike at D-Day"), I was in an Army hospital in Chamblee, Georgia. It was still dark when an attendant whispered to a patient near the door. Two words—"It's started"—went from bed to bed. Radios went on. All you could see were radio dials and the glow of cigarettes. There was no talking. I think every one of us was praying for those men who were going into France by sea or by air.

CHARLES E. PORTER, OCALA, FLORIDA

D-DAY INTELLIGENCE

IMPORTANT information about whether German forces were anticipating the Normandy landings came from pictures taken by the 423rd Night Fighter Squadron early on the morning of June 6th. Its photographs of the roads of the Cherbourg Peninsula provided good, last-minute evidence that the Germans were not making any military movements of consequence toward the Normandy area. This had to have answered some of the main questions in General Eisenhower's mind on that fateful morning.

BILL CLARK
LAS VEGAS, NEVADA

WHILE THERE has long been controversy about the origin of the expression "the whole nine yards," Michael Korda, the author of "Ike at D-Day," repeats the unlikely etymology that it referred to the length of a machine gun belt in a U.S. bomber. The saying may indeed have been used to describe such belts, but it's much more plausible that it originated in the fabric trade. The standard bolt of cloth was nine yards. When a buyer took the "whole nine yards," there would be no remnant, which a merchant might have trouble selling.

ARNOLD WILSON
MENLO PARK, CALIFORNIA

REVOLUTIONARY REAL ESTATE

ISAAC FRANKS, who first rented his house in Germantown, Pennsylvania, to George Washington in 1793, was not a colonel in the Continental Army ("Revolutionary Real Estate"). He became known as "Colonel" Franks after he was appointed a lieutenant colonel in the Philadelphia County Brigade in 1794. Though Franks billed Washington for several items after the president's two-month stay, including a missing flatiron, a large fork and three ducks, Washington rented the house again the next summer.

IRWIN MILLER
STAMFORD, CONNECTICUT

CLARIFICATION

For his article "Keepers of the Lost Ark?" about the Ethiopian Orthodox Church's claim that it holds the biblical ark of the covenant at a chapel in the town of Aksum, Paul Raffaele studied a documentary movie and read published works on the subject before conducting interviews in Ethiopia and elsewhere. Among the books he consulted was Graham Hancock's *The Sign and the Seal,* originally published in 1992. In a letter, Hancock has expressed dismay that Raffaele's article does not acknowledge *The Sign and the Seal,* even though the article follows much the same itinerary as the book and uses some of the same language. We have looked into the matter and concluded that Raffaele's approach to the subject was his own, dictated by the logic of the story itself. But Raffaele's words echo Hancock's in one significant instance. Hancock writes in his book, "the Ark of the Covenant was worshipped by the Israelites as the embodiment of God Himself. . . . Biblical and other archaic sources speak of the Ark blazing with fire and light . . . stopping rivers, blasting whole armies." Raffaele writes in the article, "Jews came to revere the ark as an earthly manifestation of God. The Old Testament describes its enormous powers–blazing with fire and light, halting rivers, blasting away armies." Raffaele apologizes for inadvertently failing to cite Hancock's book as a source for the passage. We, too, express our regret for the lapse, to Hancock and to our readers. —Ed.

CORRECTION

The toy in Emmet Gowin's 1971 family portrait ("Married With Camera") is not a train set, as described, but a Hot Wheels racetrack.

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The height wasn't "bothersome," says Loengard, who photographed Annie Leibovitz (with assistants Robert Bean, center, and Darien Davis) from a terrace.

Gaga Over a Gargoyle

From Margaret Bourke-White to Annie Leibovitz, photographers have scaled dizzying heights to frame the perfect prop **BY DAVID J. MARCOU**

THE 61ST-FLOOR TERRACE of the Chrysler Building in Manhattan had rarely seen such a large crowd. There was photographer Annie Leibovitz and her assistant Robert Bean, standing on one of the eight gargoyles that grace the building's exterior. Dancer David Parsons was on another of the gargoyles, posing for Leibovitz. A video crew was on hand to record the proceedings. So was a writer and photographer from the *New York Times*. Hovering over them all was the spirit of Margaret Bourke-White (1904-1971), the swashbuckling *Life* photographer who had herself been photographed atop one of the Chrysler's gargoyles in 1934.

"The height wasn't terribly bothersome," says John Loengard, the photographer on assignment for the *Times* that day in August 1991. Rather, he had only one thought: "This was all . . . very scary-looking, but was it going to be an interesting picture?"

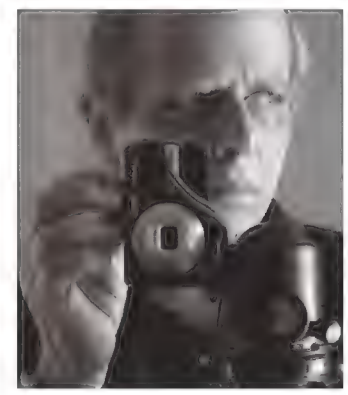
As Leibovitz snapped away at Parsons, Loengard snapped away at Leibovitz—and answered his own question in the affirmative. The resulting picture appeared in the *Times*' Arts & Leisure section on September 8, 1991, where it did nothing to diminish Leibovitz's already outsize reputation. The accompanying article, by Bourke-White biographer Vicki Goldberg, noted that the "only time [Leibovitz] lets someone hold her is when she puts one foot way out on the gargoyle's head, and once she feels secure there she makes her assistant let go and stands free above the New York skyline with the wind whipping at her trousers."

"I can't help but feel that we'll have Margaret Bourke-White's shadow over us," Leibovitz observed.

A 1934 portrait of Bourke-White (right) helped inspire Leibovitz's 1991 portrait of dancer David Parsons (above). As Leibovitz and Parsons worked, "I wondered if any photograph could justify the risks they were taking," says Loengard (below, in 2007).

By 1991, Leibovitz had already made some of her most arresting portraits—John Lennon (naked) and Yoko Ono (clothed) just hours before he was killed, Bette Midler lounging among the roses, Demi Moore large with child. Leibovitz's work had just been featured at the Smithsonian's National Portrait Gallery in Washington, D.C. in the first mid-career retrospective the museum had ever conferred upon a photographer. (Her most recent show, "Annie Leibovitz: A Photographer's Life, 1990-2005," travels to San Francisco's Fine Arts Museum in March.) She had been invited to give a lecture at the Rochester Institute of Technology, which had sent the video crew. And for the *Times* story, the paper had assigned not only Goldberg but also Loengard, a distinguished former *Life* photographer and picture editor who had edited both Bourke-White's and Leibovitz's work.

Leibovitz had started the day shooting Parsons, the founder and artistic director of the dance company bearing his name, in her downtown studio, but as evening approached she moved the shoot to the Chrysler Building. "I can't help but feel that we'll have Margaret Bourke-White's shadow over us," she can be heard saying on the video. (She declined to be interviewed for this article.) "But that's nice; that's really, really nice." Darien Davis, an aide to Leibovitz at the time, says, "I think that we sort of took the building by surprise. She just asked the office people, and they allowed access." (A representative of the Chrysler Building notes that today this would be "much more the exception than the rule.")



Parsons was game; he and Leibovitz had talked the gargoyle idea over a few days beforehand, he says. He estimates that he spent a total of about 45 minutes out on it, and he is matter-of-fact about the anxiety attack he had around the 25-minute mark. "The danger of having an anxiety attack is that you get dizzy," he says, "and I really needed to just get control again."

Leibovitz and Parsons began a pas de deux, she shooting and shouting encouragement, he standing on—and draping himself over—the stainless-steel ornament, nearly 700 feet over Midtown Manhattan, as Loengard positioned himself on the terrace. "I wondered if any photograph could justify the risks they were taking," he would recall later. In the back of his mind were two photographers who had fallen to their deaths in pursuit of the right vantage: James Burke in 1964 in the Himalayas, and Ethan Hoffman in 1990 in Newark, New Jersey. But Leibovitz, he recalls, seemed perfectly at ease. "Still photographers always put their pictures above everything else," he says. "They can take an inadvertent step backward and fall off a loading dock."

Then, as dusk was falling, Loengard saw his moment: Leibovitz exchanging film with her assistant Robert Bean. "For a split second, everybody's gesture was clear," Loengard says, "and all you can do is hope that that's what you got." That, indeed, is what he got.

DAVID J. MARCOU *is a writer and photographer in La Crosse, Wisconsin.*

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WILD THINGS

LIFE AS WE KNOW IT

BY AMANDA BENSEN, JESS BLUMBERG, T.A. FRAIL, MEGAN GAMBINO AND LAURA HELMUTH

ALARMING TASTE

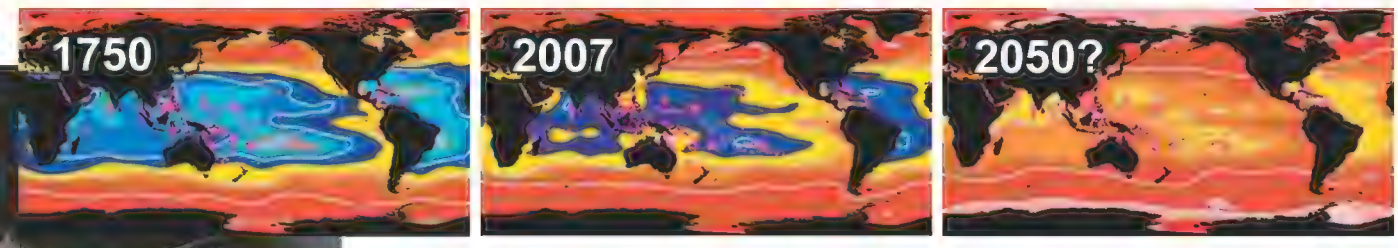
Most *Papilio* caterpillars—future swallowtail butterflies—taste horrible to birds, but only some species (like this one) sport bold colors. Why? University of Arizona-based research shows that such species favor narrow-leaf plants where they are highly visible—and their warning colors can be a bitter reminder to predators.

PRECOCIOUS

Neanderthal children (right: an artist's conception) grew up fast, say scientists at the Max Planck Institute in Leipzig and elsewhere. In a study of a 100,000-year-old jaw, growth lines in the teeth show that the Neanderthal was only 8 years old. Yet the jaw was similar to that of a 10- to 12-year-old human (even back then). The finding underscores a trait that makes people distinctive: our prolonged childhood.

CORAL GRIEF

Carbon dioxide in the atmosphere can harm coral reefs by dissolving in seawater, making it more acidic and reducing levels of calcium carbonate—a mineral corals need to build their skeletons. Researchers from Stanford and elsewhere suggest that because of the gas, calcium carbonate in oceans may be so depleted by 2050 that 98 percent of reefs worldwide will be in danger.



THE EVOLUTION OF SHARING

Common marmosets display what researchers in Zurich call "unsolicited prosociality"—that is, they will slide a tray of food to a marmoset in a nearby cage even if there's no chance of getting something in return, and even if the other animal is unrelated. So far, they're the only animals other than human beings known to be so altruistic. Whether they say "Please" and "Thank you" is unknown.

Observed

NAME: *Lilium longiflorum*, or the Easter lily, variant Nellie White.

PRETTY LITTLE FEATURES: White, trumpet-shaped flowers; sweet fragrance.

CREEPY LITTLE SECRET: The Nellie White's bulb can move. In the dirt. Where no one can see it.

NOW IT CAN BE TOLD: Cornell University researchers have found that the bulb develops one set of roots for taking nourishment from the soil and another set for . . . digging. If the bulb is planted too shallowly, those roots contract, pulling the bulb farther into the ground until it hits the optimum depth. The researchers say two things about this "contractile root" business: one, it is stimulated by light, and two, they'll be darned if they can say exactly how it works.

PHILIPPE PLAILLY / PHOTO RESEARCHERS, INC.; MARESA PRYOR / ANIMALS ANIMALS; KEN CALDEIRA; DEAN THORPE; BONNIE SUE RAUCH / PHOTO RESEARCHERS, INC.

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Mexico

Panama Canal

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World Voyage

INTERVIEW

AMY CHUA

YALE LAW PROFESSOR, NEW HAVEN, CONNECTICUT

BEN STECHSCHULTE / REDUX

The key to the rise of the Romans, the Mongols—and the U.S.? Ethnic diversity, Chua says in a new book **BY JESS BLUMBERG**

YOU SAY YOUR BOOK, *DAY OF EMPIRE*, IS A WARNING. HOW SO? I'm suggesting that, ironically, the secret to becoming a world "hyperpower" is tolerance. If you look at history, you see great powers being very tolerant in their rise to global dominance. So there is a sort of warning for today's hyperpower—the United States. The secret to our success for over 200 years has been our ability to attract the best and the brightest from all over the world. We can't just let every immigrant in. But it's important to not take a turn toward xenophobia and want to shut down the borders or root out certain groups, because history shows that that's always been the trigger of backlash and decline.

YOU GIVE SEVERAL EXAMPLES OF THE RISE OF HYPERPOWERS—NATIONS THAT ARE UNSURPASSED MILITARILY AND ECONOMICALLY—INCLUDING THE ROMAN EMPIRE, THE TANG DYNASTY AND THE DUTCH REPUBLIC. BUT NOT EVERYONE THINKS OF THE ROMAN EMPIRE AS TOLERANT. I'm not talking about tolerance in the modern human-rights sense. Rome had massive amounts of slavery; women had no rights. People were shredded at gladiator games. But the Romans were tolerant in the sense that they were indifferent to skin color and religious, ethnic or linguistic background. People of different ethnicities and religions were accepted into the Roman army and were able to become Roman citizens. The Romans thought of themselves as the chosen people, yet they built the greatest army on earth by recruiting warriors from any background.

BUT DIDN'T THE NOTION OF TOLERANCE CHANGE? Of course. Once you get to the Enlightenment, the way that powers get to be hyperpowers isn't just by conquest. It's through commerce and innovation. Societies like the Dutch Republic and the United States used tolerance to become a magnet for enterprising immigrants.

YOU SAY MODERN AMERICA HAS A LOT IN COMMON WITH THE MONGOL EMPIRE. WHAT ABOUT THE UNITED STATES WOULD GENGHIS KHAN ENDORSE? Genghis Khan decreed religious tolerance for all of his conquered peoples. So I think he definitely would approve of our constitutional protections of freedom of religion. I think he would also approve of the way the U.S. has been able to attract talented people from all over the world. The Mongols themselves had little technology, not even enough to bake bread. The only way they were able to conquer the great cities of Eastern Europe and the Middle East was by using Chinese engineers who knew how to build great siege machines. The parallel is that the U.S. was able to win the race for the atomic bomb because it was a haven for persecuted scientists from Nazi Europe.

HOW DID YOU GET INTERESTED IN GLOBAL ISSUES? My own family is Chinese, but from the Philippines. My parents immigrated here. My mother was Catholic, two grandparents were Buddhist and Protestant, and my husband is Jewish. I'm a product of globalization.

Visit Smithsonian.com/chua for the extended interview

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POINTS OF INTEREST

THIS MONTH'S GUIDE TO NOTABLE AMERICAN DESTINATIONS AND HAPPENINGS

Rocks of Ages

MOAB, UTAH—The sandstone spires, balanced rocks, slot canyons and huge arches seem to call out to be explored. Or photographed. With its dramatic red rocks and perpetually blue skies, Arches National Park is about as photogenic as a place can be.

The surreal landscape of the 73,000-acre park is a testament to the power of the elements—and time. Like much of North America, the northeastern corner of Utah lay underwater 300 million years ago. The sea dried up and left a mile-thick layer of salt, which was eventually covered by windblown sand and other sediments, forming rocks. Salt oozed upward, splitting the rocks, and then water cracked them open further as it froze and thawed. Desert wind took care of the rest, hollowing out cliff-side caves until breaking through to create spectacular arches. There are more than 2,000 in the park, including Landscape Arch, the longest in the world at 306 feet. See it while you can. A 70-foot slab fell off the arch in 1991, and it looks fairly precarious today.

Winter is a great time to visit: temperatures drop below freezing most nights but warm up to an acceptable exploring temperature of 45 degrees or so during the day. The area can reach a pitiless 110 degrees between May and September, when pretty much the only shade in the park is underneath an arch. {BY LAURA HELMUTH}

Where Eagles Feast

HAINES, ALASKA— Every winter, more than 3,000 bald eagles swoop down on the sandy flats of the Chilkat River, forming the world's largest gathering of regal raptors. They dive and jockey for position on the narrow shoals or perch by the dozens in bare cottonwood trees. In a feeding frenzy that lasts from October through February, the eagles feast on dead salmon.

How's that possible? The river here doesn't freeze, even in winter.

At the 48,000-acre Chilkat Bald Eagle Preserve, about 100 miles northwest of Juneau, runoff and snowmelt collect in an underground aquifer near the Chilkat River in spring and summer. As the Chilkat's flow lessens in winter, the warmer groundwater seeps into the river and its tributaries, which are some ten degrees warmer than surrounding waters.

As a result, salmon run later in the preserve than anywhere else in North America. Returning from the Pacific, they spawn in late fall or early winter and die. The eagles move in (some from as far away as Washington State) and devour the carcasses.

Prime viewing exists near a stretch of Haines Highway where a two-mile trail with 100 feet of boardwalk and two interpretive displays has been constructed. {BY KORRY KEEKER}

OWAKI - KULLA / CORBIS; C. ROBERT SMITH / DRR.NET

Atomic Legacy

LAS VEGAS—In the 1950s, tourists stood atop hotel roofs here to watch mushroom clouds rising from the Nevada Test Site (NTS) 65 miles away. These days they'll have to settle for the Atomic Testing Museum just minutes from the Strip.

The museum's Ground Zero Theater replicates a test-site observation bunker, with concrete walls, wooden benches, red lights and a countdown clock. During a film of an actual nuclear test, a flash of white light and bursts of air fill the room as the floor vibrates.

From 1950 until all U.S. testing ceased in 1992, the NTS was the major proving ground for nuclear weapons, carrying out 928 of 1,054 detonations. Scientists also studied the effects of radiation on people, animals and plants.

The museum, a Smithsonian Institution affiliate that opened in 2005, displays such NTS artifacts as devices that monitored blasts and measured radiation levels; part of an underground testing tunnel; even a grain silo used for cattle-feed tests. Films and interactive videos address the bombing of Hiroshima and Nagasaki. There is a copy of a letter Albert Einstein wrote to President Franklin D. Roosevelt urging him to build the nuclear bomb. A piece of the Berlin Wall represents the end of cold war tensions between the United States and the Soviet Union.

"From stone tools to the present, the nuclear age stands out," says William Johnson, director of the museum. "It was a key turning point in human history." Though most Americans supported atomic power right after World War II, it had become controversial by the 1960s. A film chronicles the anti-nuclear movement from the 1960s through the '80s. "The Atom Bomb in Pop Culture" exhibition documents a seemingly more naive time, when kids retrieved atomic rings from cereal boxes and their parents quaffed atomic cocktails. {BY SONYA PADGETT}

When Hawaii Had a King

HONOLULU—On a wide lawn punctuated with palms and an enormous banyan tree sits the only royal palace in the United States: the Iolani Palace, completed in 1882 for Hawaiian king David Kalakaua.

February marks the 125th anniversary of Kalakaua's coronation, which followed on the heels of his world tour. "He had gotten a taste of the pomp and circumstance of European monarchy," curator Stuart Ching says, adding that the king ordered two jewel-encrusted crowns from England. Kalakaua filled his rooms with vases and statuary from England, France, India and Japan. Portraits of European monarchs hang alongside those of Hawaiian royalty. The king also installed the latest innovations, such as telephones and indoor plumbing. The palace had electric lighting in 1887, before the White House.

Among the objects on view is a centuries-old royal Hawaiian cloak made of more than 450,000 yellow and scarlet feathers from two indigenous birds, the mamo and the iiwi. One of the most touching artifacts is a crazy quilt stitched by Kalakaua's sister and successor, Liliuokalani, during her eight-month house arrest at the residence in 1895. The imprisonment followed the overthrow of the monarchy two years earlier in a coup backed by the U.S. military. Liliuokalani never regained her palace. It came under the control of the provisional government, was later used as the capitol house and, falling into disrepair, was vacated in 1969. Since its restoration, completed in 1978, the palace has served as a symbol of native Hawaiians' cultural legacy. {BY CONSTANCE HALE}

At Least There's No Lift Line

STEAMBOAT SPRINGS, COLORADO—Cabin fever finds curious expression in this cowboy ski town, home to 69 winter sports Olympians over the decades: every February residents strap on skis or snowboards, harness themselves to horses and career down the town's snow-covered main street. Centuries ago *skijoring* (or "ski-driving" in Norwegian) was a means of transportation in Scandinavian countries, but here it's a giddy equestrian display, with mounted riders galloping their steeds to the finish line, breathless skiers in tow. The sport highlights Steamboat's annual Winter Carnival, founded in 1914 by Carl Howelsen, a Norwegian skier and circus performer dubbed the "Flying Norseman" by Barnum & Bailey. This year's carnival, February 6-10, features ski-racing, snow sculpture contests and the no-holds-barred *Geländesprung*, or ski-jumping, in which contestants sometimes soar the length of a football field. Skijoring itself has many variations. In one event, dogs (usually a family Labrador or golden retriever) pull kids in sleds, while in the "dad dash" fathers get down on all fours to tow the little ones. The festival ends with a parade in which costumed locals on skis hitch themselves to horses, trucks and vintage snowplows and slide through the center of town. Leading the way, as it has since 1935, will be the Steamboat Springs High School marching band. On skis, of course. {BY MICHELLE NIJHUIS}

ERIN O'BOYLE; ROBERT HOLMES / CORBIS; JOE CAVARETTA / AP IMAGES; STEAMBOAT SPRINGS CHAMBER RESORT ASSOCIATION

THIS MONTH IN HISTORY

FEBRUARY ANNIVERSARIES
MOMENTOUS OR MERELY MEMORABLE

BY ALISON McLEAN

30 YEARS AGO
RAIL TO MAIL

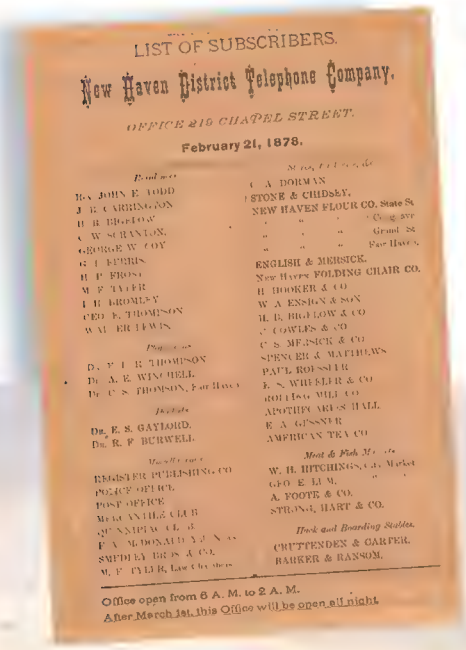
Harriet Tubman (c. 1820-1913), the former slave and Union scout who led some 300 people out of bondage on the underground railroad, becomes the first African-American woman featured on a postage stamp, February 1978. Known as the "Moses of her people" for the 19 trips she made over ten years to guide escaped slaves north, Tubman is the first honoree in the Black Heritage stamp series, issued each February.

110 YEARS AGO **BLAST FROM THE PAST**

The USS *Maine*, moored in Havana Harbor to protect Americans as pro-Spain forces spar with Cuban revolutionaries, explodes on February 15, 1898, killing 266 men. An inquiry blames a mine; the American people, sympathetic to Cuba and urged by newspapers to "Remember the Maine," blame Spain. Although the explosion may have been an accident, by April the Spanish-American War is on. Today the cause of the blast remains in dispute.

140 YEARS AGO
TRYING TIMES

The House of Representatives votes 126 to 47 on February 24, 1868, to impeach a president for the first time. Andrew Johnson, an advocate for leniency in re-admitting secessionist states to the union, is charged with unlawfully replacing a political opponent, Edwin Stanton, the secretary of war. Acquitted by one vote in May, Johnson completes his term. He dies in 1875.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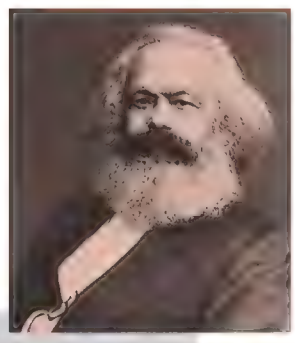
130 YEARS AGO
A QUICK READ

America's first telephone directory is distributed to 50 "subscribers" to New Haven, Connecticut's month-old telephone exchange in February 1878. Since callers are connected to one another by an operator, there is no need for telephone numbers, which won't be introduced for another year.

160 YEARS AGO **CLASS TRACT**



German philosopher Karl Marx (left), with the help of Friedrich Engels, publishes *The Communist Manifesto* in London in February 1848. He calls for a revolution of the world's working classes, with the eventual aim of eliminating class structure altogether. In 1917 Russia will attempt to implement many of Marx's proposals—the abolition of private land ownership and rights of inheritance; centralized state transportation, communications and production systems—to be followed by China in 1949. Marx dies in London in 1883 at age 64.

30 YEARS AGO
NO PAIN, NO GAIN

Gordon Haller, 27, bests 14 men to win the first Ironman Triathlon, on Oahu, Hawaii, February 18, 1978. He swims 2.4 miles, bikes 112 miles and runs 26.2 miles in 11 hours 46 minutes 58 seconds. "I pretty much thought it was another long workout," Haller later recalls. The race, started by retired Navy captain John Collins, now features some 1,700 athletes (left: 2006) who must qualify for entry.

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Around the Mall

SCENES AND SIGHTINGS FROM THE SMITHSONIAN MUSEUMS AND BEYOND

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SPRAY IT LOUD

A NEW SMITHSONIAN EXHIBITION AT THE NATIONAL PORTRAIT GALLERY HIGHLIGHTS GRAFFITI AND ITS GROWING INFLUENCE ON CONTEMPORARY ART

PAGE 28

Curator Frank H. Goodyear III (above) brings the "hip-hop aesthetic" to the National Portrait Gallery.

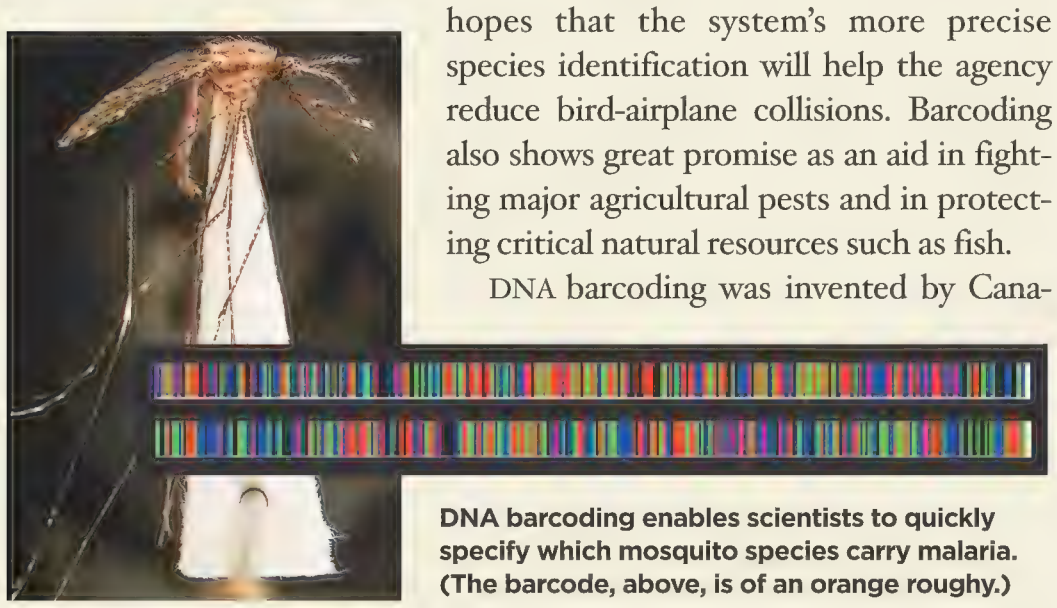
FROM THE CASTLE

Barcoding 101

BY CRISTIÁN SAMPER

MOSQUITOES CAUSE half a billion malaria infections that kill a million people annually. The mosquito *Anopheles oswaldoi* causes malaria only in northern Brazil, even though it is found throughout the country. Why? There are 3,500 mosquito species with many look-alikes; in 2006, a revolutionary new species identification system called DNA barcoding identified *A. oswaldoi* as four different species. The one that carries malaria lives only in the north. That knowledge enabled public health officials to focus malaria eradication efforts on the one problem species.

DNA barcoding has the potential to become enormously useful in a variety of applications. The U.S. Environmental Protection Agency is testing it for use in monitoring water quality, and the Federal Aviation Administration hopes that the system's more precise species identification will help the agency reduce bird-airplane collisions. Barcoding also shows great promise as an aid in fighting major agricultural pests and in protecting critical natural resources such as fish.



DNA barcoding enables scientists to quickly specify which mosquito species carry malaria. (The barcode, above, is of an orange roughy.)

DNA barcoding was invented by Canadian geneticist Paul Hebert. In a supermarket, it occurred to him that the 11-digit UPC barcodes on products are able to distinguish millions of items; he posited that a short stretch of DNA code should likewise be able to distinguish species of flora and fauna. Hebert found a stretch that differentiates animal species: a segment of DNA called COI, which is 650 base pairs long. Smithsonian and other scientists are close to finding a counterpart DNA region that will work for plants. DNA sequencing machines read COI all at once, similar to the way a scanner reads the black-and-white UPC stripes at checkout. Using the Smithsonian's vast collections (30 million insects, 7 million fish, 5 million plants and many other specimens) our scientists were among the first to publish barcode research. In 2004, soon after Hebert's pioneering work, the Alfred P. Sloan Foundation funded the 160-member, 50-country Consortium for the Barcode of Life (CBOL). Headquartered at the Smithsonian's National Museum of Natural History, CBOL is organizing efforts around the world to compile a global reference library of DNA barcodes.

Eventually, your child may carry a portable "barcorder" on field trips, just as ecologists will survey biodiversity with barcorders and GPS devices. Inspectors will use hand-held barcorders to protect us from invasive species and mislabeled imported food and medicinal products. Science and technology working to benefit society. That's an important part of what the Smithsonian is all about.

CRISTIÁN SAMPER *is Acting Secretary of the Smithsonian Institution.*

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Aerosol Art

Largely dismissed as vandalism, graffiti migrates from city streets and subway cars into major galleries

WHILE BROWSING the National Portrait Gallery this month, visitors initially might think that the museum walls have been defaced. But the four 20-foot-long graffiti murals that cover the corridors are actually part of "Recognize! Hip Hop and Contemporary Portraiture," marking the Smithsonian's first commission of the underground street art—still widely regarded as vandalism. "We are not glorifying the illegal activity, but we are acknowledging the larger impact this street tradition has had in contemporary art," says Frank H. Goodyear III, one of the exhibition's curators.

The "tags" of the artists (above), 33-year-old Tim Conlon's "Con" and 34-year-old Dave Hupp's "Arek," function as portraiture, says Jobyl Boone, one of the exhibition's curators.

When planning the exhibit—which features photography, paintings and videos influenced by hip-hop—curators saw a barren corridor as an opportunity to feature one of hip-hop culture's most characteristic staples: graffiti writing. Since museum officials were hesitant about artists spraying paint directly onto the gallery walls, the works were instead executed off-site by two local artists, Tim "Con" Conlon, 33, of Washington, D.C. and Dave "Arek" Hupp, 34, from Baltimore, who have both been spray-painting (or "tagging") trains and bridges since they were teenagers. They boast quite the portfolio of street graffiti, or what Goodyear euphemistically calls their "noncommissioned works." Hupp estimates that in his peak he tagged about 400 freight trains a year, and Conlon's signature pieces, many of which feature TV's "Simpsons" characters, can be seen around the country. In fact, their street art has gone commercial, with companies such as Coca-Cola and Delta Airlines recruiting them for advertising campaigns to target the youth demographic. Even Maisto International, a die-cast toy company, had the two artists tag model trains last year. "People who think it is just vandalism are amazed when they see what we can do with spray paint," Hupp says.

This is the first major gallery work for either artist. The four panels, which were completed this past summer, depict the traditional style of graffiti from its roots in 1970s New York City, when distorted letters and bright colors dominated. A subway car is the backdrop for one of the murals (above), and the other three pop with stylized letters that form the words "Con," "Arek" and "Recognize."

The public's view of graffiti has come a long way since Ed Koch, then New York City mayor, suggested combating graffiti artists by releasing wolves into the subway storage yards. Starting in the 1980s, spray paintings migrated into major galleries. The Brooklyn Museum exhibited 20 large-scale graffiti paintings in 2006. But displaying the work in a Smithsonian museum represents "an important step," says Tumelo Mosaka, the associate curator for exhibits at the Brooklyn Museum. "It's a recognition that cultural expression can exist outside conventional canons." Goodyear explains that graffiti's influence on modern art justifies its display. For the past 30 years, contemporary artists, like California-based muralist Brett Cook and Brooklyn-based painter Shinique Smith, have used what Goodyear calls a "hip-hop aesthetic," in which they borrow the vibrant colors, thick outlines and contorted letter shapes of street art and translate it to canvas.

Additionally, Jobyl Boone, a graduate student and the exhibit's guest curator, explains that graffiti tags function as self-portraits. "We want to present the notion that individuality and portraiture might not be someone's face or body," she says. Conlon agrees: "Graffiti is based on choosing a name and making it as prolific as possible."

{ BY JESS BLUMBERG }

JAZZ REQUIEM Trumpet player Ernest "Doc" Paulin, New Orleans' oldest traditional jazz musician, led brass bands at parades, churches, funerals and, of course, Mardi Gras for more than 60 years. During those decades, his band served as a training ground for many up-and-coming jazz musicians, including Big Al Carson and Anthony "Tuba Fats" Lacen. In November, Paulin died at age 100. His legacy is celebrated on *Doc Paulin's Marching Band*, from Smithsonian Folkways (1982), which is one of the ensemble's last recordings. Commemorate Mardi Gras this month by listening to the band's signature song, "Bye Bye Blackbird," on Smithsonian.com/jukebox. { JB }

See more photographs of the graffiti artists at work at smithsonian.com/graffiti

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THE OBJECT AT HAND

Breuer Chair, 1926

COOPER-HEWITT NATIONAL DESIGN MUSEUM

LESS WAS MORE

Marcel Breuer's Bauhaus minimalism redefined a household basic

BY OWEN EDWARDS

TO PARAPHRASE the great comic-strip possum Pogo, "We have seen chairs, and they are us."

Unlike the practical table or the bland, beckoning bed, a chair is never simply a chair. Taking the shape of a person, chairs are the most metaphoric of humanity's furniture, imitating us when we are in them, echoing us when we are not.

Because of this, and also because chairs are everywhere (at least in the Western world), they became an imperative challenge for some of the greatest architects and designers of the 20th century, from Ludwig Mies van der Rohe to Charles and Ray Eames to Frank Gehry. Many of the most influential attempts to reinvent the chair were those made by Europeans associated with the Bauhaus school in Germany starting in the early 1920s. By combining bent metal with canvas, caning or leather, Bauhaus designers introduced chairs with lightness, strength and minimalism that echoed the 19th-century bentwood furniture of the Austrian and German Thonet company, even as they leapt into the industrial age.

Breuer (top: in a B3 chair) drew inspiration for the B3 and the B5 (above) from bicycle handlebars.

Marcel Breuer, a Hungarian furniture maker and architect who studied at the Bauhaus and became one of its most important faculty members, was among the first to use tubular steel in chairs. An early Breuer design, the B5 chair from 1926, has recently been added to the collection of the Smithsonian's Cooper-Hewitt, National Design Museum in New York City.

"This chair is an iconic design that has been on our furniture wish list for a long time," says Sarah Coffin, curator of decorative arts at the museum. "We like to tell the history of design by showing things as part of a continuum, and Breuer's work relates to bentwood furniture and industrial design."

Born in Pecs, Hungary, in 1902, Breuer is one of the founders of the Modernist movement, and his vision was central to the concept of merging form and function in the simplest way possible. The B5 is one of two revolutionary Breuer chairs that served as a dramatic antidote to the overstuffed seating of the Edwardian era and gave birth to a new way of seeing furniture. The other is the B3 armchair, created the year before; it came to be known as the Wassily Chair because the painter Wassily Kandinsky, also on the Bauhaus faculty, admired and owned one.

Both chairs—particularly the B5—have a spare elegance that epitomizes the clarity that Breuer and his associate Walter Gropius brought to their architecture. But since a chair requires less compromise than a building, the

TONY VACCARO / AKG-IMAGES; MATT FLYNN / COOPER-HEWITT, NATIONAL DESIGN MUSEUM, SI

Perhaps it's the 18,000 miles of coastline peppered, for good measure, with majestic icebergs and humpbacks. Or the mere wonder of walking on the Tablelands in Gros Morne National Park – the very middle of the earth - thanks to a tectonic upheaval half a billion years ago. Whatever it is, around here, it's hard not to gain some serious perspective. And perhaps, recover a little sanity.

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CANADA

B5 is considered one of the most perfect expressions of modern design. It seems fresh after more than 80 years. Rob Forbes, founder of the furniture retailer Design Within Reach, describes it as "Shaker meets Bauhaus." "This is a great piece and one I picked for our first catalog," he says. "The B5 was very radical for its time, though now it seems so logical, both delicate and strong, with very happy, compact proportions."

Don Chadwick, co-designer of the ubiquitous Aeron office chair, agrees: "The side chair represents one of the first attempts to industrialize bent steel tubing as the support structure for the sling seating surfaces, very pure in its simplicity."

Breuer's first bent metal designs were made with aluminum, the essential modern metal, but that proved both expensive and difficult to weld, so the designer soon switched to tubular steel. The example now at the Cooper-Hewitt, bought at auction in New York City last spring, was a rare find. "This is a vintage piece," Coffin says, "with chrome-plated steel tubing and the original paraffin-infused canvas fabric that Breuer used, known as *Eisengarn* [iron yarn]. The first chairs came in four colors: black, green, rust red and blue. This one was rust red but has mellowed with age to a shade of brown."

After Hitler came to power in the '30s, Breuer left Germany for England, where he continued to experiment with new materials—he designed his Long Chair in shaped laminated wood there—and then immigrated to the United States. He taught at Harvard with his friend Gropius, passing along the Modernist credo to Philip Johnson, among others. Breuer later designed houses and large urban buildings, such as the Unesco headquarters in Paris. He died in New York City in 1981 at age 79, but the B5 lives on, with exact replicas still being manufactured. In Germany.

OWEN EDWARDS *is a freelance writer and author of the book* Elegant Solutions.

Q&A

Retired country star **GARTH BROOKS** donated a collection of mementos to the American History museum, including his trademark cowboy hat, an acoustic guitar, a gold record and a handwritten lyric sheet. He spoke with the magazine's Jess Blumberg.

HOW DOES IT FEEL TO BE IN A MUSEUM WITH LEGENDS LIKE PATSY CLINE AND DUKE ELLINGTON? It's funny being the person that's in here because never ever do you measure up to the people that already are. My dad always told me "time is a friend to all things good." So all I can hope is that time turns these things into something as cool [as those] that are already here.

ONE OF THE ITEMS YOU DONATED IS A REPAIRED GUITAR THAT YOU SMASHED IN 1991. YOU'RE A COUNTRY SINGER, SO WHY DO YOU PERFORM LIKE A ROCK STAR? When I talk to the band before we perform, I tell them to always keep it entertaining. Don't feel bad if you try something and it doesn't work out. It's just doing things that people hopefully remember that stick you in a place and time in their mind. When you talk about my career, when they show a highlight reel, they're never going to show it without me smashing that guitar.

YOU ARE THE TOP-SELLING SOLO ARTIST IN U.S. HISTORY. WHY DO YOU THINK AMERICANS APPRECIATE YOUR MUSIC? Before you were born, there was [Merle] Haggard and [George] Jones, the guys I was raised on. They sang about a blue-collar lifestyle and digging yourself out. Men and women today are thinking that way. Our [music] deals with spousal abuse, acceptance of people for whom they love, freedom of speech, these kinds of things.

WHY WERE LYRICS TO "BEACHES OF CHEYENNE" PART OF THIS DONATION? I write lyrics on everything: pieces of napkins, on walls, anything that I can. So this might be the only one with the full lyrics all on one piece of paper.

MAKING HISTORY

Apartments made of mud in Yemen.

THE DIRT ON MUD As rapid advancements in technology render last year's inventions obsolete, it's reassuring to know that a 13,000-year-old innovation is still being used today: mud. This economical building material aids in the construction of everything from grand palaces and temples to simple shops and homes. Gus Van Beek, an anthropologist from the Smithsonian's National Museum of Natural History, and his wife, Ora, an independent scholar, have been researching methods of ancient and contemporary mud architecture in Southwest Asia, the Middle East, North Africa, Europe and the United States since 1971. One of their findings is that mud houses are best suited for desert climates, as they absorb and dissipate heat slowly, providing an ambient interior temperature. Concrete structures, by contrast, trap heat and act like ovens. Get more dirt on this building material in *Glorious Mud!*, a new reference book from Smithsonian Institution Scholarly Press. "Mud," says Ora, "is a magnificent property for humanity." { JB }

TIM SLOAN / AFP / GETTY IMAGES; BETHUNE CARMICHAEL / LONELY PLANET IMAGES

Clockwise starting top left: Caño Negro Wildlife Refuge; Tortuguero Park Canal Cruise; White Faced Monkey; Keel Billed Toucan; Manuel Antonio Park; Rainforest Hike

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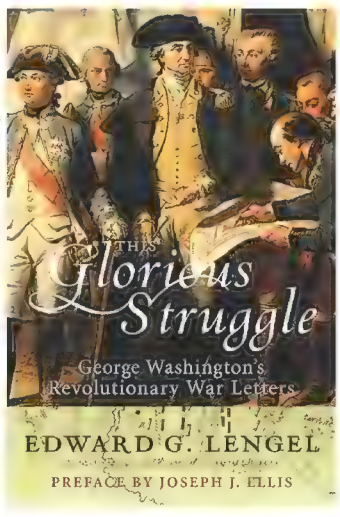
What's Up

ALL A-FLUTTER The morpho butterfly (right) owes its iridescent wing color to small scales that reflect blue light. See this species and hundreds of others take flight in a walk-through pavilion, and visit the accompanying exhibition—both starting this month at Natural History.

MOVING MEDIA

In the first of a two-part show, the Hirshhorn features artwork that uses film and video (*Eight*, 2001) to blur the lines between illusion and reality. Venture into a new world through May 11.

BEST IN SHOW
The 2007 winner of the Lucelia Artist Award, given to a U.S. artist under 50, was Jessica Stockholder for her evocative use of mundane objects (above). Works of past winners are at American Art until June 22.



SINCERELY, G.W.

Read George Washington's candid personal letters (1775-83)—including one in which he enclosed a lock of hair for an admirer—in *This Glorious Struggle* by Edward G. Lengel, new from Smithsonian Books.

COLOR PALETTE

In the 1950s, artists embraced the Color Field movement by covering canvases with vast expanses of paint. More than 40 works (Kenneth Noland's *Earthen Bound*, 1960) are at American Art until May 26.

{ BY JESS BLUMBERG }

KEVIN SCHAFER / CORBIS; TANYA BONAKDAR GALLERY, NEW YORK / HIRSHHORN MUSEUM, SI; SI BOOKS; VAGA, NY / SAAM; MITCHELL-INNES & NASH, NEW YORK / SAAM

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Smithsonian
(FEBRUARY 2008 · VOLUME 38, NUMBER 11)

The Parthenon, said the 19th-century French engineer Auguste Choisy, represents "the supreme effort of genius in pursuit of beauty."

UNLOCKING MYSTERIES OF THE PARTHENON

Efforts to restore the 2,500-year-old temple of Athena are yielding new insights into the astonishing feats of the golden age's master builders **BY EVAN HADINGHAM**

DURING THE PAST 2,500 YEARS, the Parthenon—the apotheosis of ancient Greek architecture—has been rocked by earthquakes, set on fire, shattered by exploding gunpowder, looted for its stunning sculptures and defaced by misguided preservation efforts. Amazingly, the ancient Athenians built the Parthenon in just eight or nine years. Repairing it is taking a bit longer.

A restoration project funded by the Greek government and the European Union is now entering its 33rd year, as archaeologists, architects, civil engineers and craftsmen strive not simply to imitate the workmanship of the ancient Greeks but to re-create it. They have had to become forensic architects, reconstructing long-lost techniques to answer questions that archaeologists and classical scholars have debated for centuries. How did the Athenians construct their mighty temple, an icon of Western civilization, in less than a decade—apparently without an overall building plan? How did they manage to incorporate subtle visual elements into the Parthenon's layout and achieve such faultless proportions and balance? And how were the Parthenon's builders able to work at a level of precision (in some cases accurate to within a fraction of a millimeter) without the benefit of modern tools? "We're not as good as they were," Lena Lambrinou, an architect on the restoration project, observes with a sigh.

If the Parthenon represents "the supreme effort of genius in pursuit of beauty," as the 19th-century French engineer and architectural historian Auguste Choisy declared, at the moment it looks more like a construction site. Ancient masonry hides behind thickets of scaffolding, planks and steel poles. Miniature rail tracks connect sheds that house lathes, marble cutters and other power equipment. In the Parthenon's innermost sanctuary, once the home of a massive ivory-and-gold statue of Athena, a gigantic collapsible crane turns on a concrete platform.

Though heavy equipment dominated the hilltop, I also found restorers working with the delicacy of diamond cutters. In one shed, I watched a mason toiling on a fresh block of marble. He was one of some 70 craftsmen recruited for the project from Greece's sole remaining traditional marble school, located on the island of Tinos. His technique was exacting. To make the new block exactly match an old, broken one, the mason used a simple pointing device—the three-dimensional equivalent of a pantograph, which is a drafting instrument for precisely copying a sketch or blueprint—to mark and transfer every bump and hollow from the ancient stone to its counterpart surface on the fresh block. On some of the largest Parthenon blocks, which exceed ten tons, the masons use a mechanized version of the pointing device, but repairing a single block can still take more than three months. The ancient workers were no less painstaking; in many cases, the joints between the blocks are all but invisible, even under a magnifying glass.

The Parthenon was part of an ambitious building campaign on the Acropolis that began around 450 B.C. A generation before, the Athenians, as part of an alliance of Greek city-states, had led heroic victories against Persian invaders. This alliance would evolve into a de facto empire under Athenian rule, and some 150 to 200 cities across the Aegean began paying Athens huge sums of what amounted to protection money. Basking in glory, the Athenians planned their new temple complex on a lav-

Loving it to death, restoration workers in previous centuries made repairs that actually hastened the Parthenon's decline (c. 1910).

ish, unprecedented scale—with the Parthenon as the centerpiece. Surviving fragments of the financial accounts, which were inscribed in stone for public scrutiny, have prompted estimates of the construction budget that range from around 340 to 800 silver talents—a considerable sum in an age when a single talent could pay a month's wages for 170 oarsmen on a Greek warship. The Parthenon's base was 23,028 square feet (about half the size of a football field) and its 46 outer columns were some 34 feet high. A 525-foot frieze wrapped around the top of the exterior wall of the building's inner chamber. Several scholars have argued that the frieze shows a procession related to the quadrennial Great Panathenaia, or the festival "of all the Athenians." By incorporating this scene of civic celebration, the scholars suggest, the Parthenon served not merely as an imperial propaganda statement but also as an expression of Athens' burgeoning democracy—the will of the citizens who had voted to fund this exceptional monument.

Architect Manolis Korres (above), former coordinator of the restoration project, has studied every facet of the Parthenon's construction—and depicted highlights in vivid sketches (left).

When the current restoration effort began in 1975, backed by $23 million from the Greek government, the project's directors believed they could finish in ten years. But unforeseen problems arose as soon as workers started disassembling the temples. For example, the ancient Greek builders had secured the marble blocks together with iron clamps fitted in carefully carved grooves. They then poured molten lead over the joints to cushion them from seismic shocks and protect the clamps from corrosion. But when a Greek architect, Nikolas Balanos, launched an enthusiastic campaign of restorations in 1898, he installed crude iron clamps, indiscriminately fastening one block to another and neglecting to add the lead coating. Rain soon began to play havoc with the new clamps, swelling the iron and cracking the marble. Less than a century later, it was clear that parts of the Parthenon were in imminent danger of collapse.

Until September 2005, the restoration's coordinator was Manolis Korres, associate professor of architecture at the National Technical University of Athens and a leading Parthenon scholar. He has spent decades poring over every detail of the temple's construction. In a set of vivid drawings, he depicted how the ancient builders extracted some 100,000 tons of marble from a quarry 11 miles northeast of central Athens, roughly shaped the blocks, then transported them on wagons and finally hauled them up the steep slopes of the Acropolis. Yet all that grueling labor, Korres contends, was dwarfed by the time and energy lavished on fine-tuning the temple's finished appearance. Carving the

To mimic the ancient handiwork, a mason carving rings in a marble column guides his chisel along a shadow's edge. Did the original builders have better tools than today's artisans?

long vertical grooves, or flutes, that run down each of the Parthenon's main columns was probably as costly as all the quarrying, hauling and assembly combined.

Today's restorers have been replacing damaged column segments with fresh marble. To speed up the job, engineers built a flute-carving machine. The device, however, is not precise enough for the final detailing, which must be done by hand. This smoothing of the flutes calls for an expert eye and a sensitive touch. To get the elliptical profile of the flute just right, a mason looks at the shadow cast inside the groove, then chips and rubs the stone until the outline of the shadow is a perfectly even and regular curve.

The ancients spent a lot of time on another finishing touch. After the Parthenon's exposed marble surfaces had been smoothed and polished, they added a final, subtle texture—a stippling pattern—that Korres says dulled the shine on the marble and masked its flaws. With hundreds of thousands of chisel blows, they executed this pattern in

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EVAN HADINGHAM *is senior science editor of PBS's* NOVA *series. The* NOVA *program "Secrets of the Parthenon" airs January 29, 2008.*

MARK DANIELS; MANOLIS KORRES; EVAN HADINGHAM; P. 38 HENRY GUTTMANN / GETTY IMAGES; PP. 36-37 ARIS MESSINIS / AFP / GETTY IMAGES

Restorers are still coping with damage from a 1687 explosion sparked by a Venetian cannonball that struck the temple, used then as an ammunition dump by the occupying Turks.

During an ill-fated restoration effort begun more than 100 years ago, Nikolas Balanos stabilized loose blocks with iron clamps. Over time, the clamps deteriorated, cracking the marble and putting parts of the Parthenon in danger of collapsing.

Typifying the modern restoration's extra effort, workers lifted a 55-ton column less than an inch (left). They then removed and repaired the damaged bottom segment and slid it back (right).

precisely ordered rows covering the base, floors, columns and most other surfaces. "This was surely one of the most demanding tasks," Korres says. "It may have taken as much as a quarter of the total construction time expended on the monument."

With such fanatical attention to detail, how could the Parthenon's architects have finished the job in a mere eight or nine years, ending somewhere between 438 and 437 B.C.? (The dates come from the inscribed financial accounts.) One key factor may have been naval technology. Since the Athenians were the greatest naval power in the Aegean, they likely had unrivaled mastery of ropes, pulleys and wooden cranes. Such equipment would have been essential for hauling and lifting marble blocks.

Another, counterintuitive possibility is that ancient hand tools were superior to their modern counterparts. After analyzing marks left on the marble surfaces, Korres is convinced that centuries of metallurgical experimentation enabled the ancient Athenians to create chisels and axes that were sharper and more durable than those available today. (The idea is not unprecedented. Modern metallurgists have only recently figured out the secrets of the traditional samurai sword, which Japanese swordsmiths endowed with unrivaled sharpness and strength by regulating the amount of carbon in the steel and the temperature during forging and cooling.) Korres concludes that the ancient masons, with their superior tools, could carve marble at more than double the rate of speed of today's craftsmen. And the Parthenon's original laborers had the benefit of experience, drawing on a century and a half of temple-building know-how.

Moreover, the restoration team has confronted problems that their ancient Greek counterparts could never have contemplated. During the Great Turkish War in the late 17th century—when the Ottoman Empire was battling several European countries—Greece was an occupied nation. The Turks turned the Parthenon into an ammunition dump. During a Venetian attack on Athens in 1687, a cannonball set off the Turkish munitions, blowing apart the long walls of the Parthenon's inner chamber. More than 700 blocks from those walls—eroded over time—now lay strewn around the Acropolis. For five years, beginning in 1997, Cathy Paraschi, a Greek-American architect on the restoration project, struggled to fit the pieces together, hunting for clues such as the shape and depth of the cuttings in the blocks that once held the ancient clamps. Eventually, she abandoned her computer database, which proved inadequate for capturing the full complexity of the puzzle. "Some days were exhilarating," she told me, "when we finally got one piece to fit another. Other days I felt like jumping off the Acropolis." In the end, she and her co-workers managed to identify the original positions of some 500 of the blocks.

Looming over each restoration challenge is the delicate question of how far to go. Every time the workers dismantle one of Balanos' crude fixes, it is a reminder of how destructive an overzealous restorer can be. As the director of

MANOLIS KORRES; EVAN HADINGHAM; SOKRATIS MAVROMMATIS (2); P. 41 RANDY MAYS; SOKRATIS MAVROMMATIS

The most inspiring building in the West was 228 feet long and 101 feet wide, with 46 outer columns about 34 feet high, constructed of marble quarried 11 miles away. Today (below), a crane sits where a statue of Athena once stood. For restorers, the blocks that formed the walls pose a mind-boggling 3-D puzzle.

the Acropolis Restoration Project, Maria Ioannidou, explains, "we've adopted an approach of trying to restore the maximum amount of ancient masonry while applying the minimum amount of new material." That means using clamps and rods made of titanium—which won't corrode and crack the marble—and soluble white cement, so that repairs can be easily undone should future generations of restorers discover a better way.

There have been some bravura feats of engineering. The 1687 explosion had knocked one of the massive columns out of position and badly damaged its bottom segment. A serious earthquake in 1981 damaged it further, and the entire column appeared at risk of toppling. The obvious procedure was to dismantle the column, one segment after another, and replace the crumbling section. Korres, hoping to avoid "even the smallest departure from the column's perfection and authenticity of construction," designed a metal collar that exerts precisely controlled forces to grasp a column securely without harming the stone. In the early 1990s, after the careful removal of the overhead blocks and lintels, the collar was suspended by turnbuckles (adjustable connectors) inside a mounted, rectangular steel frame. By tightening the turnbuckles, the team raised the 55-ton column less than an inch. They then removed the bottom segment—which they repaired with fresh marble to an accuracy of one-twentieth of a millimeter—and slid it back into position. Finally, they lowered the rest of the column into place on top of the repaired segment. "It was a bold decision to do it this way," Korres says. "But we were young and daring then."

Possibly to trick the eye, very subtle curves were deliberately engineered into different parts of the temple, including the base, floor and columns.

PERHAPS NONE of the Parthenon's mysteries stirs more debate than the gentle curves and inclinations engineered throughout much of its design. There is hardly a straight line to be found in the temple. Experts argue over whether these refinements were added to counter optical illusions. The eye can be tricked, for instance, into seeing an unsightly sag in flat floors built under a perched roof like the Parthenon's. Possibly to correct this effect, the Athenians laid out the Parthenon's base so that the 228-by-101-foot floor bulges slightly toward the middle, curving gradually upward between 4 and 4 1/2 inches on its left and right sides, and 2 1/2 inches on its front and back. One theory holds that this slight upward bulge was built simply to drain rainwater away from the temple's interior. But that fails to explain why the same curving profile is repeated not only in the floor but in the entablature above the columns and in the (invisible) buried foundations. This graceful curve was clearly fundamental to the overall appearance and planning of the Parthenon.

And then there are the columns, which the Athenians built so that they bulged slightly outward at the center. This swelling was termed entasis, or tension, by Greek writers, perhaps because it makes the columns seem as if they are clenching, like a human muscle, under the weight of their load. Again, some scholars have long speculated that this design might compensate for another trick of the eye, since a row of tall, perfectly straight-sided pillars can appear thinner at the middle than at the ends.

No matter the motivation for these refinements, many early scholars assumed that crafting such visual elements imposed tremendous extra demands on the Parthenon's architects and masons. (One wrote of the "terrifying complications" involved.) No architectural manuals survive from the Classical Greek era, but today's experts suspect the temple builders could add curves and inclined angles with a few relatively simple surveying tricks. "If you're building without mortar, every block . . . must be trimmed by hand," notes Oxford University archaeologist Jim Coulton. "Although tilts and curvatures would require careful supervision by the architect, they don't add a lot to the workload."

Still, how could each column segment be measured so that all would fit together in a single, smoothly curving profile? The likely answer was found not in Athens but nearly 200 miles away in southwestern Turkey. In the town of Didyma rises one of the most impressive relics of the ancient world, the Temple of Apollo. Three of its 120 colossal columns still stand, each nearly twice the height of the Parthenon's. The wealthy trading city of Miletus commissioned the temple in the age of Alexander the Great, around 150 years after the Parthenon's completion. The gigantic ruins testify to a project of grandiose ambition: it was never finished despite 600 years of construction efforts. But thanks to its unfinished state, crucial evidence was preserved on temple walls that had not yet undergone their final polishing.

A few years after the Parthenon restoration began, University of Pennsylvania scholar Lothar Haselberger was on a field trip exploring the Temple of Apollo's innermost sanctuary. He noticed what seemed to be patterns of faint scratches on the marble walls. In the blinding morning sunlight the scratches

SOKRATIS MAVROMMATIS

To see the author's photographs of the Parthenon project, go to Smithsonian.com/parthenon

are all but invisible, as I discovered to my initial frustration when I searched for them. After the sun had swung around and began grazing the surface, however, a delicate web of finely engraved lines started to emerge. Haselberger recalls, "All of a sudden I spotted a series of circles that corresponded precisely to the shape of a column base, the very one at the front of the temple." He realized he had discovered the ancient equivalent of an architect's blueprint.

Then, just above the outline of the column base, Haselberger noticed a pattern of horizontal lines with a sweeping curve inscribed along one side. Could this be related to entasis, also evident in the towering Didyma columns? After carefully plotting the pattern, the answer became clear: it was a profile view of a column with the vertical dimension—the height of the column—reduced by a factor of 16. This scale drawing must have been a key reference for the masons as they carved out one column segment after another. By measuring along the horizontal lines to the edge of the curve, they would know exactly how wide each segment would have to be to create the smooth, bulging profile. Manolis Korres believes that the ancient Athenians probably relied on a carved scale drawing similar to the one at Didyma in building the columns of the Parthenon.

Haselberger also traced a labyrinth of faint scratches covering most of the temple's unfinished surfaces. The lines proved to be reference drawings for everything from the very slight inward lean of the walls to details of the lintel structure supported by the columns. There were even floor plans, drafted conveniently right on the floor. As the temple's stepped platform rose, each floor plan was copied from one layer to the next. On the topmost floor, the builders marked out the positions of columns, walls and doorways.

The discoveries at Didyma suggest that the temple builders operated on a "plan-as-you-go" basis. "Clearly, a lot of advance planning went into a building like the Parthenon," Coulton says. "But it wasn't planning in the sense that we'd recognize today. There's no evidence they relied on a single set of plans and elevations drawn to scale as a modern architect would."

Still, the Parthenon remains something of a miracle. The builders were steered by tradition, yet free to experiment. They worked to extreme precision, yet the final result was anything but rigid. A commanding building, with supple and fluid lines, emerged from a blend of improvised solutions.

But the miracle was short-lived. Only seven years after the construction of the Parthenon was completed, war broke out with Sparta. Within a generation, Athens suffered a humiliating defeat and a devastating plague. The story of the Parthenon resembles an ancient Greek tragedy, in which an exceptional figure suffers a devastating reversal of fortune. And from Korres' perspective, that calamity is all the more reason to restore the greatest remnant of Athens' golden age. "We wanted to preserve the beauty of what has survived these past 2,500 years," he says. "A reminder of man's power to create, as well as to destroy."

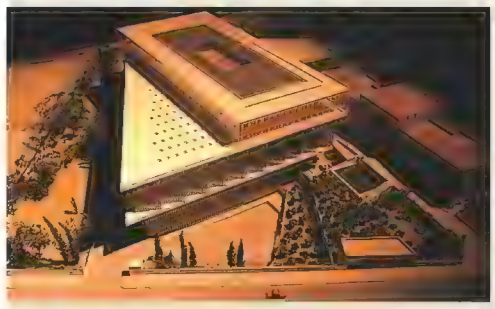
HARF ZIMMERMAN / THE NEW YORK TIMES / REDUX; KOSTAS TSIRONIS / AP IMAGES

Acropolis Now

A modern museum of ancient Greece rises near the Parthenon

Housing more than 4,000 works of art, the New Acropolis Museum in Athens will contain the world's most extensive repository of Archaic and Classical Greek sculptures. The $190 million glass-and-concrete complex, at the foot of the Acropolis and just over 300 yards from the Parthenon, has been more than seven years in the making and is expected to completely open by early 2009.

The structure echoes ancient Athenian architecture without imitating it. Simply trying to mimic the Parthenon—perhaps the most influential building in Western civilization—might be kitschy, says Bernard Tschumi, a New York- and Paris-based architect who designed the museum.



The New Acropolis Museum (a model) tries to balance ancient and modern styles.

In the lower level galleries, sculptures by Phidias, Alcamenes and other ancient masters will be placed so they can be studied in the round, "like living persons," says museum director Dimitrios Pandermalis. "We're not lecturing people about the golden era of Pericles, but letting them discover for themselves the beauty of facial expressions, the movements of the horses and warriors." The ground floor is mostly glass and is raised on concrete stilts to showcase the archaeological work conducted on the site prior to construction. The dig yielded finds from prehistoric times through the 12th century.

An exhibit that will most likely be missing is the so-called Elgin Marbles, sculptural works that include 247 feet of the original Parthenon frieze. Lord Elgin, the British ambassador to Constantinople in the early 19th century, acquired the masterpieces from the Ottomans who then ruled Greece. The marbles are now at the British Museum. The New Acropolis Museum will display some of the remaining original frieze along with plaster replicas of the Elgin Marbles.

In a design masterstroke, the glass-enclosed top floor is turned at a 23-degree angle from the two lower levels to align with the Parthenon. Sculptures will be arrayed largely as they were in the original temple. "The idea," Tschumi says, "is to create a dialogue between the sculptures and the Parthenon." { RICHARD COVINGTON }

MONUMENTAL MISSION

Assigned to find and repatriate countless works of art looted by the Nazis in World War II, the Western Allied forces known as "Monuments Men" faced a challenge whose scope is only now coming to light

BY ROBERT M. POOLE

Nazis swept across Europe scooping up paintings and other booty, which they shipped to Germany. (An American soldier guards looted goods in 1945 in an Ellingen, Germany, church.)

THE BEST BIRTHDAY present Harry Ettlinger ever got arrived on the frigid morning of January 28, 1945. The 19-year-old Army private was shivering in the back of a truck bound from France toward southern Belgium. There the Battle of the Bulge, raging for most of a month, had just ended, but the fighting continued. The Germans had begun their retreat with the new year, as Private Ettlinger and thousands of other soldiers massed for a counterassault. "We were on the way east," Ettlinger recalls, "when this sergeant came running out. 'The following three guys get your gear and come with me!' he yelled. I was one of those guys. I got off the truck."

NATIONAL ARCHIVES AND RECORDS ADMINISTRATION, COLLEGE PARK, MD; PP. 44-45 NATIONAL ARCHIVES AND RECORDS ADMINISTRATION, COLLEGE PARK, MD

Europe's museums stripped their collections for safekeeping in World War II (above: custodian in Louvre gallery). Adolf Hitler and Hermann Goering (opposite: meeting at Goering's lodge) targeted art for plunder. At war's end, Gen. Dwight D. Eisenhower (far right) examines Nazi stash in Merkers mine.

The Army needed interpreters for the forthcoming Nuremberg war trials, and someone had noticed that Ettlinger spoke German like a native—for good reason: he *was* a native. Born in the Rhine-side city of Karlsruhe, Ettlinger had escaped Germany with his parents and other relatives in 1938, just before the shock of Kristallnacht made it abundantly clear what Hitler had in mind for Jewish families like his. The Ettlingers settled in Newark, New Jersey, where Harry finished high school before being drafted into the Army. After several weeks of basic training, he found himself headed back to Germany—a place he had never expected to see again—where the last chapter of the European war was being written in smoke and blood.

Ettlinger's Nuremberg assignment evaporated without explanation, and he was plunged into a thoroughly unexpected sort of war, waged deep in Germany's salt mines, castles, abandoned factories and empty museums, where he served with the "Monuments Men," a tiny band of 350 art historians, museum curators, professors and other unsung soldiers and sailors of the Monuments, Fine Arts, and Archives section. Their task, begun with the uncertain peace of May 1945, was to find, secure and return the millions of pieces of art, sculpture, books, jewelry, furniture, tapestries and other cultural treasures looted, lost or displaced by seven years of upheaval.

The conflict swallowed up a massive volume of cultural objects—paintings by Vermeer, van Gogh, Rembrandt, Raphael, Leonardo, Botticelli and lesser artists. Museums and homes throughout Europe had been stripped of paintings, furniture, ceramics, coins and other objects, as were many of the continent's churches, from which silver crosses, stained glass, bells and painted altarpieces disappeared; age-old Torahs vanished from synagogues; entire libraries were packed up and spirited away by the trainload.

"It was the largest theft of cultural items in history," says Charles A. Goldstein, a lawyer with the Commission for Art

ROBERT M. POOLE, *a contributing editor at* SMITHSONIAN, *is researching a new history of Arlington National Cemetery.*

LIBRARY OF CONGRESS; NATIONAL ARCHIVES AND RECORDS ADMINISTRATION, COLLEGE PARK, MD

ETTLINGER WAS PLUNGED INTO A THOROUGHLY UNEXPECTED SORT OF WAR, WAGED DEEP IN GERMANY'S SALT MINES, CASTLES, ABANDONED FACTORIES AND EMPTY MUSEUMS.

Recovery, an organization promoting restitution of stolen works. "I've seen figures every which way, but there is no question that the scale was astronomical."

The most systematic looting, at the behest of Adolf Hitler and his reichsmarshal, Hermann Goering, swept up thousands of prime artworks in France, Italy, the Netherlands, Poland, Germany, Russia and other war-ravaged countries; indeed, in their thorough way of doing things, the Nazis organized a special squad of art advisers known as the Einsatzstab Reichsleiter Rosenberg (ERR), which targeted Europe's masterpieces for plunder. Choice works were detailed in some 80 leatherbound volumes with photographs, which provided guidance for the *Wehrmacht* before it invaded a country. Working from this hit list, Hitler's army shipped millions of cultural treasures back to Germany, in the *Führer*'s words, to "safeguard them there." From the other direction, Soviets organized a so-called Trophy Commission, which methodically picked off the cream of Germany's collections—both legal and looted—to avenge earlier depredations at the hands of the Wehrmacht.

At the same time, state art repositories across Europe crated their prized collections and shipped them away in hopes of shielding them from Nazi looting, Allied bombing and Russian pillaging. The *Mona Lisa*, bundled into an ambulance and evacuated from the Louvre in September 1939, stayed on the go through much of the war; hidden in a succession of countryside châteaux, Leonardo's famous lady avoided capture by changing addresses no fewer than six times. The prized 3,300-year-old beauty Queen Nefertiti was whisked from Berlin to the safety of the Kaiseroda potash mine at Merkers in central Germany, where thousands of crates from the state museums were also stored. Jan van Eyck's Ghent altarpiece, a 15th-century masterwork the Nazis had looted from Belgium, was shipped to the

Beset by Allied bombing, German museums buried their masterworks in mines. (Monuments Men Ford, above left, and Ettlinger examine a Rembrandt self-portrait in Heilbronn.) After the war, Ford headed a design school in Grand Rapids, Mich.; Ettlinger (opposite) became an engineer in Newark, NJ.

mines of Alt Ausee, Austria, where it sat out the last months of the war alongside other cultural treasures.

When the smoke cleared, Hitler planned to unearth many of these spoils and display them in his hometown of Linz, Austria. There they would be showcased in the new Führer Museum, which was to be one of the finest in the world. This scheme died with Hitler in 1945, when it fell to Ettlinger and other Monuments Men to track down the missing artwork and provide refuge for them until they could be returned to their countries of origin.

"That's what made our war different," Ettlinger, now 82, recalls. "It established the policy that to the victor do not go the spoils. The whole idea of returning property to its rightful owners in wartime was unprecedented. That was our job. We didn't have much time to think about it. We just went to work."

For Ettlinger, that meant descending 700 feet below ground each day to begin the long, tedious process of clearing artwork from the salt mines of Heilbronn and Kochendorf in southern Germany. Most of these pieces were not looted but belonged legally to German museums in Karlsruhe, Mannheim and Stuttgart. From September 1945 to July 1946, Ettlinger, Lt. Dale V. Ford and German workers sorted through the subterranean treasures, ferreting out works of questionable ownership and sending paintings, antique musical instruments, sculptures and other objects topside for delivery to Allied collecting points in the American zone of Germany. At major collecting points—in Wiesbaden, Munich and Offenbach—other Monuments teams arranged objects by country of origin, made emergency repairs and assessed claims by delegations who came to recover their nation's treasures.

Perhaps the most notable find at Heilbronn was a cache of stained-glass windows from the cathedral of Strasbourg, France. With Ettlinger supervising, the windows, packed in 73 cases, were shipped directly home without passing through a collecting point. "The Strasbourg windows were the first thing we sent back," says Ettlinger. "That was on orders of Gen. Dwight D. Eisenhower, supreme

NATIONAL ARCHIVES AND RECORDS ADMINISTRATION, COLLEGE PARK, MD

commander of Allied forces, as a gesture of good faith." The windows were welcomed home with a huge celebration—a sign not only that the Alsatian city was free again after centuries of domination by Germany but also that the Allies intended to restore the fruits of civilization.

Most of Ettlinger's comrades had training in art history or museum work. "Not me," says Ettlinger. "I was just the kid from New Jersey." But he worked diligently, his mastery of German indispensable and his rapport with mineworkers easy. He was promoted to technical sergeant. After the war, he went home to New Jersey, where he earned degrees in engineering and business administration and produced guidance systems for nuclear weapons. "To tell you the truth, I wasn't as interested in the paintings as I was in other things over there," says Ettlinger, now retired in Rockaway, New Jersey.

Upon arrival at the Kochendorf mine, Ettlinger was shocked to learn that the Third Reich had intended to make it an underground factory using 20,000 workers from nearby concentration camps. The Allied invasion scuttled those plans, but a chill lingered over the mines, where Ettlinger was reminded daily of his great luck: had he not escaped Germany in 1938, he could have ended up in just such a camp. Instead, he found himself in the ironic position of supervising German laborers and working with a former Nazi who had helped pillage art from France. "He knew where the stuff was," Ettlinger says. "My own feelings couldn't enter into it."

CHRONICALLY UNDERSTAFFED, underfinanced and derided as effete "Venus fixers" by service colleagues, the Monuments Men soon learned to make do with very little and to maneuver like buccaneers. James Rorimer, curator of the Metropolitan Museum of Art's medieval collections in civilian life, served as a model for all Venus fixers who followed him—inventive and fearless in the face of authority. When someone on Gen. Eisenhower's staff filled the supreme commander's residence with old paintings and furniture from the Versailles Palace, Rorimer indignantly ordered them removed, convinced that he was engaged in nothing less than safeguarding the best of civilization.

Capt. Rorimer arrived in Heilbronn just as the ten-day battle for that city shut off the electrical supply, which caused the mine's pumps to fail, threatening massive flooding of the treasures below. He made an emergency appeal to Gen. Eisenhower, who, having forgiven the officer's earlier furniture removal operation, dispatched Army engineers to the scene, got the pumps going and saved thousands of pieces of art from drowning.

Rorimer also went head-to-head with the fearsome Gen. George S. Patton. Both men wanted to take over the former Nazi Party headquarters in Munich—Patton for his regional Third Army command center, Rorimer for processing artwork. Rorimer somehow convinced Patton that he needed the building more, and Patton found offices elsewhere. Few people who had seen Rorimer in action were surprised when, after the war, he was chosen as director of the Metropolitan Museum in New York City. He died in 1966.

"It helped to be a little sneaky," says Kenneth C. Lindsay, 88, a Milwaukee native who thoroughly detested Army life until he read of Rorimer's exploits, applied for a transfer from the Signal Corps, became a Monuments Man and reported to the Wiesbaden Collecting Point in July of 1945.

There Sgt. Lindsay found his new boss, Capt. Walter I. Farmer, an interior decorator from Cincinnati, bustling

"THE WHOLE IDEA OF RETURNING PROPERTY TO ITS RIGHTFUL OWNERS WAS UNPRECEDENTED," SAYS HARRY ETTLINGER. "WE DIDN'T HAVE MUCH TIME TO THINK ABOUT IT. WE JUST WENT TO WORK."

ROBERT M. POOLE

around the former Landesmuseum building, a 300-room structure that had served as a state museum before the war and as a *Luftwaffe* headquarters during the conflict. It had miraculously survived repeated bombings, which had nonetheless shattered or cracked its every window. The heating system had died, a U.S. Army depot had sprouted in the museum's former art galleries, and displaced German citizens had taken over remaining nooks and crannies of the old building. Farmer, Lindsay and a complement of 150 German workers had just under two months to depose the squatters, fire up the furnace, root out the bombs, fence off the perimeter and prepare the museum for a shipment of art scheduled to arrive from wartime repositories.

"It was a nightmare," recalls Lindsay, now living in Binghamton, New York, where he was chairman of the art history department of the State University of New York. "We had to get the old building going. Well, fine, but where do

you find 2,000 pieces of glass in a bombed-over city?"

Farmer took matters into his own hands, deploying a crew to steal the glass from a nearby Air Force site. "They came back with 25 tons of glass, just like that!" says Lindsay. "Farmer had larceny in his veins, God bless him! My job was to get the workers to install the glass so that we had some protection for the art we were about to receive."

Lindsay was there to greet the first convoy on the morning of August 20, 1945, when 57 heavily loaded trucks, escorted by armed tanks, rumbled up to the Wiesbaden Collecting Point. Capt. Jim Rorimer rode like a proud potentate at the head of the motorcade, a bumper-to-bumper procession of artwork stretching miles from Frankfurt. As the first trucks backed up to the Wiesbaden storage areas and began to unload their cargo without incident, Rorimer turned to Lindsay. "Good work you're doing," he barked before racing off to his next crisis. "And that," says Lindsay, "is the only compliment I ever got in my whole time in the Army."

After the brutalities of a long war, those gathered at Wiesbaden were particularly touched when one old friend showed up that morning. Germans and Americans alike heaved a collective sigh of relief as the crate containing Queen Nefertiti rolled onto the docks. "The Painted Queen is here," a worker cried. "She's safe!" Having escaped Berlin, survived burial in the mines, rattled up the bombed-out roads to Frankfurt and endured seclusion in the vaults of the Reichsbank, the beloved statue had finally arrived.

She would have plenty of company in Wiesbaden, where the cavalcade of trucks kept coming for ten days straight, disgorging new treasures in a steady stream. By mid-September, the building was brimming with antiquities from 16 Berlin state museums, paintings from the Berlin Nationalgalerie, silver from Polish churches, cases of Islamic ceramics, a stash of antique arms and uniforms, thousands of books and a mountain of ancient Torahs.

"I'M SUDDENLY LOOKING INTO NEFERTITI'S FACE, JUST AS BEAUTIFUL AS WHEN SHE LIVED IN THE 18TH DYNASTY. I LIFTED HER OUT AND THAT IS WHEN EVERY MAN IN THE ROOM FELL IN LOVE WITH HER."

When a delegation of high-ranking Egyptians and Germans came to check on Nefertiti, Lindsay arranged an unveiling—the first time anyone had gazed upon the Egyptian queen for many a year. Workers pried open her crate. Lindsay peeled off a protective inner wrapping of tarpaper. He came to a thick cushioning layer of white spun glass. "I leaned down to pull the last of the packing material away and I'm suddenly looking into Nefertiti's face," says Lindsay. "That face! She's gazing back at me, 3,000 years old but just as beautiful as when she lived in the 18th Dynasty. I lifted her out and put her on a pedestal in the middle of the room. And that is when every man in that place fell in love with her. I know I did."

The majestic Nefertiti, carved from limestone and painted in realistic tones, reigned at Wiesbaden until 1955, when she was returned to Berlin's Egyptian Museum. She resides there today in a place of honor, charming new generations of admirers—among them her fellow Egyptians, who maintain that she was smuggled out of their country in 1912 and ought to be returned. Although Egypt recently renewed its claim for Nefertiti, Germany has been unwilling to give her up, even temporarily, for fear that she might be damaged in transit. Besides, the Germans say, any works legally imported before 1972 can be kept under the terms of a Unesco convention. Yes, say the Egyptians, but Nefertiti was exported illegally, so the convention does not apply.

AT LEAST NEFERTITI HAS A HOME. The same could not be said for the cultural treasures that finished the war as orphans, with no identifiable parentage and no place to go. Among these were hundreds of Torah scrolls and other religious objects looted from European synagogues and salvaged for a prospective Nazi museum devoted to "the Jewish question." Many of these objects, owned by individuals or communities obliterated by the Third Reich, were given their own room at Wiesbaden.

Stalking the corridors of the vast Landesmuseum at all hours, Lindsay felt an involuntary shudder each time he passed the Torah room. "It was an unnerving situation," he said. "We knew the circumstances that had brought those things in. You couldn't sleep at night."

Wiesbaden's inventory of famous paintings and sculptures was whittled down and repatriated—a process that took until 1958 to complete—but the Torahs and other religious objects remained unclaimed. It soon became clear that a new collecting point was needed for these priceless objects still being unearthed in postwar Germany.

This material was sent to the newly established Offenbach Archival Depot near Frankfurt, where more than three million printed items and important religious materials would be gathered from Wiesbaden, Munich and other collecting points. The Offenbach facility, located in a five-story factory owned by the I.G. Farben company, opened in July 1945. Several months later, when Capt. Seymour J. Pomrenze, a career Army officer and archives specialist, arrived to supervise the facility, he found the depot stacked to the ceilings with books, archival records and religious objects in disarray.

"It was the biggest mess I've ever seen," recalls Pomrenze, 91, and now living in Riverdale, New York. Libraries stolen from France—including the invaluable collections and papers of the Rothschild family—were mingled with those from Rus-

BERNARD TAPER; NATIONAL ARCHIVES AND RECORDS ADMINISTRATION, COLLEGE PARK, MD; KENNETH C. LINDSAY; ROBERT M. POOLE (3)

Rescuing cultural treasures helped the careers of Monuments Men Bernard Taper (left: top and below), Seymour J. Pomrenze (middle: top and below) and Kenneth Lindsay (right: top and below). Taper became a *New Yorker* writer and journalism professor; Pomrenze, the Army's chief archivist; and Lindsay, founding chairman of the art history department of SUNY at Binghamton.

sia and Italy, family correspondence was scattered among Masonic records and Torah scrolls were strewn in heaps.

"The Nazis did a great job of preserving the things they wanted to destroy—they didn't throw anything out," says Pomrenze. In fact, he jokes, they might have won the war if they had spent less time looting and more time fighting.

He found a bewildered staff of six German workers wandering among the piles of archival material at Offenbach. "Nobody knew what to do. First we needed to get bodies in there to move this stuff," recalls Pomrenze, who boosted the staff by 167 workers in his first month. Then, leafing through the major collections, he copied all identifying bookmarks and library stamps, which pointed to a country of origin. From these he produced a thick reference guide that allowed workers to identify the collections by origin.

Pomrenze then divided the building into rooms organized by country, which cleared the way for national representatives to identify their material. The chief archivist of the Netherlands collected 329,000 items, including books stolen from the University of Amsterdam and a huge cache relating to the Order of Masons, considered anti-Nazi by the Germans. French archivists claimed 328,000 items for restitution; the Soviets went home with 232,000 items; Italy took 225,000; smaller restitutions were made to Belgium, Hungary, Poland and elsewhere.

No sooner had Pomrenze started to make a dent in the Offenbach inventory than newly discovered materials poured into the depot; the paper tide continued through 1947 and 1948. "We had things pretty well organized by then," says Pomrenze. Yet even after some two million books and other items had been dispersed, about a million objects remained. Pomrenze's successor described how it felt to comb through the unclaimed material, such as personal letters and boxes of books. "There was something sad and mournful about these volumes, as if they were whispering a tale of . . . hope, since obliterated," wrote Capt. Isaac Bencowitz. "I would find myself straightening out these books and arranging them in the boxes with a personal sense of tenderness, as if they had belonged to someone dear to me."

Pomrenze eventually helped to find homes for many of the orphaned materials, which went to 48 libraries in the United States and Europe and the YIVO Institute for Jewish Research in New York City.

Capt. James Rorimer (overseeing the removal of looted art from Neuschwanstein Castle in southern Germany) established a reputation as fearless, innovative and knowledgeable—a model for the Monuments Men serving under him. He became director of the Metropolitan Museum of Art in New York.

"As far as I am concerned," says Pomrenze, "that was the highlight of the assignments I had in the Army, where I served for a total of 34 years." Pomrenze, who retired as a colonel and chief archivist of the Army, suggests that one must not lose sight of the written word's role in the story of civilization. "Paintings are beautiful and, of course, culturally valuable, but without archives we'd have no history, no way to know exactly what happened."

The lessons of the past are especially important to Pomrenze, a native of Kiev who immigrated to the United States at age 2, after his father was killed in the Ukrainian pograms of 1919. "The Ukrainians killed 70,000 Jews that year," says Pomrenze, who took quiet pride in helping to right the balance by his wartime service.

THE NAZIS RECORDED their thefts in detailed ledgers that eventually fell into the hands of officers like Lt. Bernard Taper, who joined the Monuments squad in 1946. "The Nazis made our job easier," says Taper. "They said where they got the stuff. They would describe the painting and give its measurements, and they would often say where they had sent the collection. So we had some very good clues."

Indeed, the clues were so good that Taper's colleagues had secured most of the high-value paintings—prime Vermeers, da Vincis, Rembrandts—by the time Taper arrived on the scene. That left him to investigate widespread looting by German citizens who pilfered from the Nazi hoard in the time between Germany's collapse and the Allies' arrival.

"There were probably thousands of pieces in this second wave, the looting of the looted," says Taper. "Not the most famous objects but many valuable ones. We looked for stuff on the black market, made regular checks among the art dealers and went out into the countryside to follow up promising leads."

Taper scoured the hills around Berchtesgaden, near the Austrian border, to recover the remains of Goering's vast

NATIONAL ARCHIVES AND RECORDS ADMINISTRATION, COLLEGE PARK, MD

LOOTING IRAQ

No one was prepared for the pillaging of Baghdad's Iraq Museum in 2003, but a fast-thinking Marine officer, Col. Matthew Bogdanos, improvised an investigation—and helped recover thousands of stolen antiquities

Looting has been a part of war at least since 333 B.C., when Alexander the Great strolled into the tent of King Darius III, helped himself to the vanquished Persian's best tapestries and commandeered the royal bathtub for a soothing victory soak. In the years since, victors have taken the spoils, and in their wake, ordinary citizens and opportunistic thieves have grabbed anything of value in that confused pause between war and peace.

All the looting at Baghdad's Iraq Museum had taken place by the time U.S. troops—engaged in toppling Saddam Hussein—arrived to protect it, on April 16, 2003. Between April 8, when the museum was vacated, and April 12, when the first of the staff returned, clubs in hand, thieves had plundered an estimated 15,000 items, many of them choice antiquities: ritual vessels, heads from sculptures, amulets, Assyrian ivories and more than 5,000 cylinder seals.

The looting proved less extensive than the early reports of 170,000 stolen artifacts, but the losses were nonetheless staggering. "Every single item that was lost is a great loss for humanity," says Donny George Youkhanna, the former director general of Iraqi museums, now a visiting professor at the State University of New York at Stony Brook. "It is the only museum in the world where you can trace the earliest development of human culture—technology, agriculture, art, language and writing—in just one place."

Before the war, leading archaeologists had warned that the museum was vulnerable, but neither Iraqi officials nor invading troops were prepared for such aggressive plunder. There was nothing like the World War II-era Monuments, Fine Arts, and Archives task force poised to secure, track down and recover Iraq's venerable treasures. But there was the "Pit Bull," also known as Marine Col. Matthew Bogdanos, a reservist, classics scholar and amateur boxer, who had earned his civilian nickname as a homicide prosecutor in New York City.

"I felt exactly the way the rest of the world did—outraged—when I heard of the looting in Baghdad," says Bogdanos, (pictured above) who was leading a counterterrorist unit in southern Iraq when he learned of the pillaging. He quickly got permission from the U.S. Central Command to form an ad hoc "Monuments" team, composed of 14 members with investigative experience. Bogdanos and his team dashed north to Baghdad, arriving April 20. They established security at the museum complex and, huddling with museum authorities, began an inventory of missing treasures. They dispatched descriptions to border guards, customs agents, international police agencies and archaeologists around the world. They put out the word that no one returning stolen items would be prosecuted. "If you bring something back to the museum," Bogdanos was fond of saying, "the only question you will be asked is whether you would like a cup of tea."

Over the next few weeks, stolen goods began to trickle back, including a 6000 B.C. pot wrapped in a 21st-century garbage bag and the Sacred Vase of Warka (c. 3200 B.C.), in the trunk of a car. Objects were unearthed from backyards, fished out of a cesspool, recovered in pre-dawn raids. Some simply reappeared on museum shelves. Other treasures were seized from international antiquities markets in Jordan, Lebanon, Syria, Kuwait, Saudi Arabia and New York. A scholar returning from the war zone was collared at John F. Kennedy International Airport and convicted of smuggling three 4,000-year-old cylinder seals from the museum's collection.

"Mothers turned in items stolen by their sons," says Bogdanos. "Sons turned in items stolen by their friends. Employees turned in items stolen by their bosses." And as the investigation unfolded, it developed that hundreds of the most valuable items missing from the museum—including a cache of gold jewelry from Nimrud—had not been stolen at all but stashed, since the Gulf War of 1990-91, for safekeeping in Iraq's Central Bank.

George estimates that about half of the 15,000 looted treasures have either been returned or secured in other countries until they can be safely repatriated. Still missing are thousands of cylinder seals, a famous eighth-century B.C. gold-and-ivory plaque known as *The Lioness Attacking a Nubian* and choice pieces of statuary from the ancient city of Hatra. An optimist with an archaeologist's long view of history, George believes that in the fullness of time, all of the antiquities will be returned. Meanwhile, many of Iraq's 12,500 archaeological sites continue to be vulnerable to looting, and the Iraq Museum remains closed, its treasures bricked up within interior storage rooms. "The museum must be the last place to be opened after everything else is completely secured in the country," says George.

After two tours in Iraq and service in the Horn of Africa and at the Pentagon, Bogdanos returned home to New York City in 2005, in time for the publication of his book, *Thieves of Baghdad.* (All royalties are being donated to the Iraq Museum.) He continues to investigate the Iraqi thefts as chief of a newly created antiquities task force in the New York County district attorney's office. "Until every last piece stolen from the Iraqi Museum has been recovered and returned to the Iraqi people," he says, "I will continue to be haunted by what is still missing."

—R.M.P.

OZIER MUHAMMAD / THE NEW YORK TIMES / REDUX

Visit Smithsonian.com/wegener to learn how troops are trained to protect art in wartime

art collection, thought to contain more than 1,500 looted paintings and sculptures. As Soviet troops pressed toward eastern Germany in the last days of war, Goering had feverishly loaded art from his Carinhall hunting lodge into several trains and dispatched them to air raid shelters near Berchtesgaden for safekeeping. "Goering managed to unload two of the cars, but not the third one, which was left on a siding when his entourage fled into the arms of the Seventh Army," he says.

The rumor quickly spread that the reichsmarshal's unguarded car was loaded with schnapps and other good things, and it was not long before thirsty Bavarians were swarming over it. "The lucky first ones did get schnapps," says Taper. "Those who came later had to be satisfied with 15th-century paintings and Gothic church sculptures and French tapestries and whatever else they could lay their hands on—including glasses and silver flatware with the famous H.G. monogram."

The loot disappeared into the green hills. "That country was so beautiful—it looked like something out of *Heidi*," Taper, 90, recalls while flipping through his official investigative reports from those days. He often traveled with Lt. Edgar Breitenbach, a Monuments Man who made the rounds disguised as a peasant, in lederhosen and a tiny pipe that kept him wreathed in a corona of smoke. They recovered much of the loot—a school of Rogier van der Weyden painting, a 13th-century Limoges reliquary and Gothic statues they tracked to the home of a woodcutter named Roth. "Herr Roth said he wasn't a thief," Taper recalls. "He said these statues were lying on the ground in the rain with people stepping on them. He said he took pity on them and took them home." Taper reclaimed them.

As far as Taper could determine, all three paintings had been rushed out of Poland in the winter of 1945 with Hans Frank, the country's Nazi governor general, as the Soviets bore down from the east. Arrested by Allies near Munich in May of that year, Frank surrendered the Leonardo and the Rembrandt, but the Raphael was gone. "It may have been destroyed in the fighting," says Taper. "Or it may have gone home with the Soviets. Or it may have been left on the road from Krakow to Munich. We just don't know." Unlike the other paintings, it was on panel, not canvas, so it would have been harder to transport and conceal. More than 60 years later, the Raphael remains missing.

Taper became a staff writer for *The New Yorker* and a professor of journalism at the University of California at Berkeley after the war. He still dreams about the Raphael. "It's always in color, even though all I ever had was a little black-and-white photograph." He pauses a long time. "I still think I should have found that damn thing."

TAPER IS ONE of a diminishing fraternity. Of the original 350 Monuments Men (including a score of Monuments Women) no more than 12 are known to be alive—just one reason a retired Texas oilman and philanthropist named Robert M. Edsel has made it his mission to call attention to their wartime deeds. "Theirs was a feat that must be characterized as miraculous," says Edsel, who has written about Taper, Ettlinger and their colleagues in a recent book, *Rescuing Da Vinci*; co-produced a documentary, *The Rape of Europa*; and persuaded Congress to pass resolutions recognizing their service. He has also established the Monuments Men Foundation for the Preservation of Art to safeguard artistic treasures during armed conflict.

"THEIRS IS A FEAT THAT MUST BE CHARACTERIZED AS MIRACULOUS," SAYS TEXAS BUSINESSMAN AND MONUMENTS MEN CHAMPION ROBERT M. EDSEL. "THIS GROUP IS AN INSPIRATION FOR OUR TIMES."

Not all of the cargo from Goering's schnapps train remained intact. During the melee by the rail siding, local women tussled over a 15th-century Aubusson tapestry until a local official suggested a Solomon-like solution: "Cut it up and divide it," he urged. And so they did, taking the tapestry away in four pieces. Taper and Breitenbach found its remains in 1947, by which time the hanging had been divided again. "One of the pieces was being used for curtains, one for a kid's bed," says Taper. The rest had vanished.

This was also the fate of one of the most important objects of Nazi looting, Raphael's *Portrait of a Young Man*, an early-16th-century painting that disappeared in the final days of the war. Over many months, Taper searched for the painting, which had been the pride of the Czartoryski Museum in Krakow until 1939, when one of Hitler's art agents snapped it up for the Führer, along with Leonardo's *Lady With an Ermine* and Rembrandt's *Landscape With the Good Samaritan*.

"This group is an inspiration for our times," he adds. "We know they returned around five million cultural items between 1945 and 1951. I would speculate that 90 to 95 percent of the high-value cultural objects were found and returned. They deserve the recognition they never got."

Meanwhile, their story continues. Hundreds of thousands of cultural items remain missing from the war. Russia has confirmed that it holds many of the treasures, including the so-called Trojan gold of King Priam. Long-missing works are reappearing in Europe as one generation dies and old paintings and drawings emerge from attics. And hardly a month seems to pass without reports of new restitution claims from the descendants of those most brutalized by World War II, who lost not only their lives but also their inheritance.

"Things will keep appearing," says Charles A. Goldstein, of the Commission for Art Recovery. "Everything will surface eventually."

Visit Smithsonian.com/monuments for more images of the Allied effort to recover art

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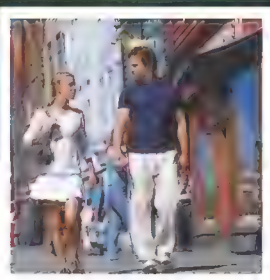

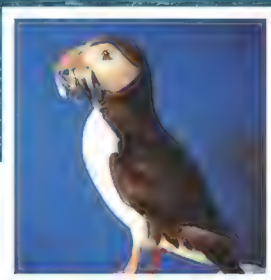

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In a mating ritual, male humpback whales leap, splash and fight. But researchers ask: just what does a female whale want?

BY VIRGINIA MORELL

BIG LOVE

It's a perfect morning for sighting humpback whales. The water is calm under a slight breeze. Researchers Lou Herman and Adam Pack and three assistants scan the horizon with binoculars, looking for the characteristic misty plume blown into the air by a surfacing whale. Herman steers his motor launch, *Kohola II*, into the shallow waters of Auau Channel, separating Maui and Lanai islands.

"OK, off the starboard, we've got a competitive pod," shouts Pack, of the Dolphin Institute, a research center based in Honolulu. In a competitive pod, a female is accompanied by males vying to mate with her. The contests can be violent—the suitors often attack each other underwater—and the pod grows or shrinks as the melee attracts newcomers and drives others away.

Ten males are now swarming around this female. We watch the whales surface and spout, their black backs arching above the waves almost in unison as they breathe and dive. They're packed tightly together, like a team of motorcycle toughs, and they churn the water white and foamy. Sometimes a male surges ahead, breaking high above the waves to reveal its long, winglike pectoral fins. Thus the animal's scientific name: *Megaptera novaeangliae*, the giant wing of New England, because the first humpbacks to be scientifically described came from northeastern U.S. waters.

Humpback whales gather near Hawaii by the thousands each December to May, many of them drawn by the chance to breed. Though they weigh up to 50 tons, Herman Melville wrote that they are the most "light-hearted" whales.

Herman motors in close behind the white wake of the whales. "They're going flukes-up in a minute," Pack calls out, and the others ready their cameras to record the underside of each whale's flukes, or the two halves of its tail. Humpback whales have distinctive black-and-white patterns on their flukes, enabling researchers to identify individuals.

Herman has studied humpbacks here for 34 years, making this one of the longest-running whale research projects. A psychologist by training, Herman studies dolphin intelligence as well as humpback whale behavior; he's now president of the Dolphin Institute. He's published more than a hundred papers on such topics as the songs of humpbacks, their migration routes and interactions between mothers and calves. Pack joined the project in the 1990s, and the two scientists now oversee the life-history records of every whale the team photographs.

"OK, ready, we've got flukes coming up on the right," Pack calls out, as one of the males heads nose-down in a deep dive, the kind that will show off every inch of his tail as it flips up behind him. "Hey, we know him," Pack shouts. "I think we've got a re-sight of Number 48."

P. 56 DOUG PERRINE / SEAPICS.COM / PHOTO TAKEN UNDER NATIONAL MARINE FISHERIES SERVICE (NMFS) SCIENTIFIC RESEARCH PERMIT #882 ISSUED TO HAWAII WHALE RESEARCH FOUNDATION (HWRF)

The three assistants fire away with their cameras, before the entire pod dives far below the surface.

"Pod's down," Pack announces. "Let's wait a few minutes, and then I want a full-boat watch."

Four minutes go by. "Behind you!" research assistant Aliza Milette shouts from the stern. "Pod up!"

Herman swings the boat around, positioning it again behind the whales, which battle on oblivious to our presence. Pack assigns names as they surface. "This male—maybe Number 48—on the left is Whitehook, the one behind him is Spade, that one with the tall dorsal fin, I'm calling Tall." A male with a slightly tilted dorsal fin is dubbed Slope, and two other males are christened Whitepoint and Flat. The female is referred to simply as N.A., or Nuclear Animal, since most of the action centers on her. N.A. seems not to notice; her dives are slow and smooth, her manner easy and unruffled.

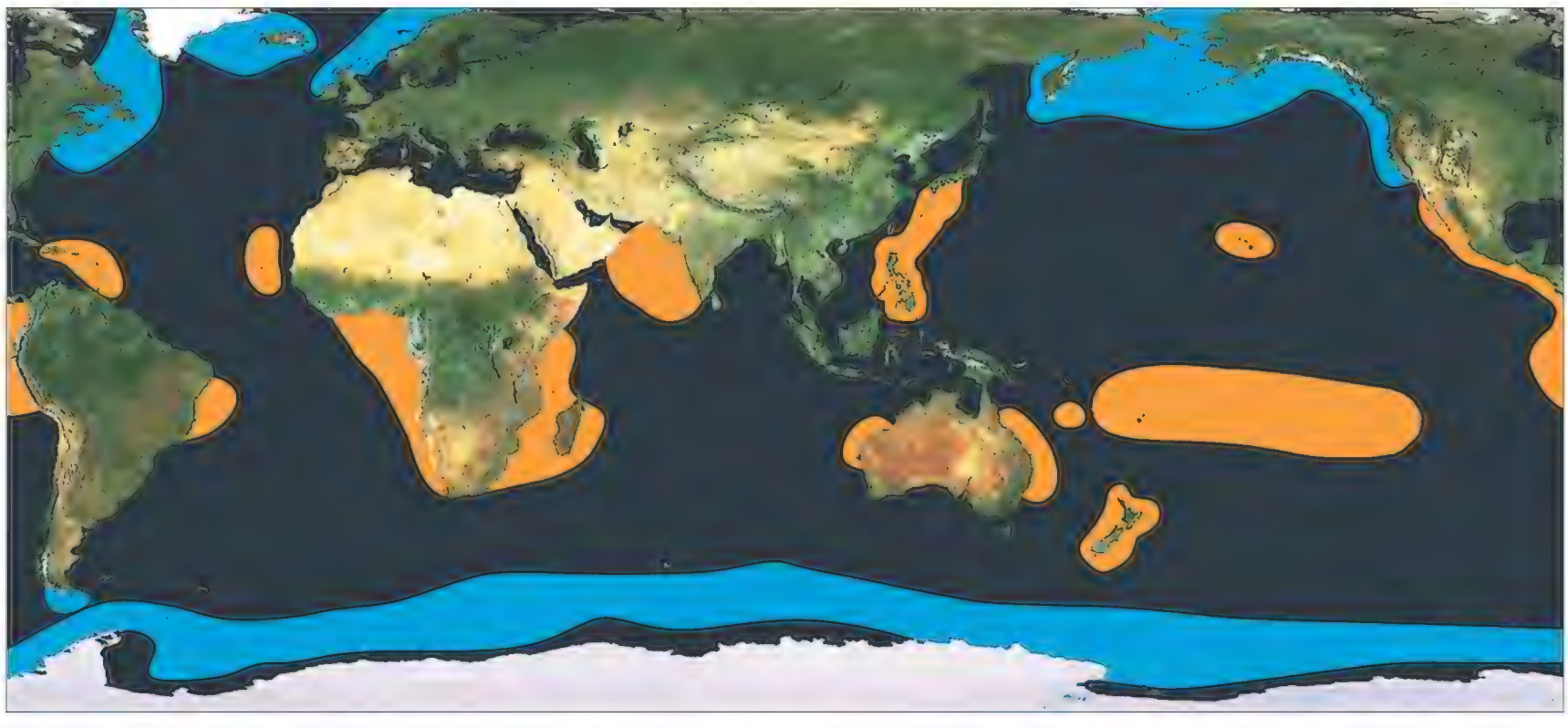
"The female always sets the pace in these shows," Herman says. Yet around her peaceful bulk, all is mayhem. Whitehook heaves himself half out of the water to charge headfirst at another male. He again launches himself skyward, then falls backward, a maneuver Pack calls a "reversal," which makes a male look larger to his rivals. Whitehook then slaps his long jaw on the water, breaches again and makes yet another reversal.

"Wow! He must be the P.E., the principal escort," says Pack. "There's usually one guy in these pods who does most of the showing off."

"It's his way of showing her—and his competitors—his energy and strength," adds Herman. "He's likely to be the one swimming the closest to her, too, and guarding her, keeping the other males away."

"We think the females choose a particular male," says Herman, "but we don't know that for certain, and we don't know what male attributes the females prefer."

Herman and Pack hope to witness a mating, something never before seen in humpback whales. Their grand pursuit would settle some of the most basic questions about the natural history of the species. If females choose their mates, as Herman suspects, observing the whales' mating behavior could reveal which males are most attractive to females. Scientists suspect that the largest, most powerful—and therefore among the oldest—males in a competitive pod are most likely to succeed in mating. In the past, such large whales may have been prime targets for hunters, which may help explain why the humpback whale population dropped so precipitously in the past century.



Once hunted to the ends of the earth, humpback whales were nearly wiped out, with some 250,000 killed for their meat and oil (top: a whaling station in Durban, South Africa) from 1900 until a 1966 hunting ban was adopted worldwide. Humpbacks may swim 10,000 miles annually between the prey-rich waters where they feed (above: in blue) and their breeding grounds (orange).

MARGARET SURMON COLLECTION / COURTESY OF ALLAN JACKSON; WWW.FAD.CO.ZA; RANDY MAYS

I STOOD WITH a cluster of tourists on a cliff above the Auau Channel and watched humpbacks breach in the waters below. Improbably, given their mass and bulk, they seemed to hover above the sea before crashing backward. At each daring breach, we whale watchers gasped, laughed and applauded. The humpbacks appeared to be having fun, too, seemingly confirming Herman Melville's description of them in *Moby-Dick* as the "most gamesome and light-hearted of all the whales."

Humpbacks are among the world's largest creatures. Adults weigh as much as 50 tons and grow as long as 50 feet (impressive, but only half the length of blue whales). Like most "great whales," or those longer than 30 feet, they are members of the baleen family, which means they fuel their massive bodies by filtering shrimplike krill and small fish through plates called baleen, which hang from their upper jaws. They spend most of the year feeding in cold, prey-rich waters in the northern and southern oceans. (This year humpbacks were found north of Alaska in the Beaufort Sea for the first time, possibly because of climate change, says Phil Clapham, a whale expert at the National Oceanic and Atmospheric Administration, or NOAA.)

Male humpback whales eager to mate typically join a "competitive pod" (above: near Hawaii) and vie with one another—often violently—for a cow's favor. "The female always sets the pace in these shows," says researcher Lou Herman (with a dolphin at his marine mammal lab in Hawaii).

FLIP NICKLIN / MINDEN PICTURES / PHOTO OBTAINED UNDER NMFS PERMIT #987; KEN SAKAMOTO / STAR BULLETIN

VIRGINIA MORELL *has written about the Zuni Indians, climate science and wildebeests for* SMITHSONIAN.

Blood in the Water

Japan's lethal whale research draws criticism

Amid worldwide protests, Japanese fishing authorities this past December postponed plans to kill as many as 50 humpback whales for research. The controversy, including official U.S. criticism of the proposed hunt, underscores the privileged role humpback whales play in the public imagination as one of the most charismatic sea creatures.

The incident also cast a harsh light on a provision in the international whaling agreement that allows nations to permit killing whales for scientific purposes. Indeed, Japanese officials say they're going forward with plans to kill nearly 1,000 whales of other species this year under the research exemption. Iceland and Norway have invoked the exemption in the past, but Japan attracts the most criticism because of the scale of its hunts and its stated goal of easing whale-hunting restrictions. Some marine biologists criticize the Japanese work as little more than a cover for industrial-scale hunting of whales for food. Japanese authorities acknowledge that whales hunted for research are processed at sea and that the meat is sold in stores and served in restaurants in Japan.

Whale hunting is regulated by the International Whaling Commission (IWC), formed in 1946 with 15 member nations (including the United States) and now numbering 78. The humpback was one of the first whales to receive protection: in 1966, the IWC enacted a worldwide moratorium on hunting the species. The IWC extended the moratorium to all commercial whaling in 1986.

Citing the research exemption, Japanese whalers have killed more than 10,000 whales since the late 1980s, according to the IWC. Most were minke whales, which are relatively abundant, but others were less common Bryde's, sei, sperm and fin whales. One of Japan's representatives to the IWC, Joji Morishita, says whales are a "natural resource" and "should be managed in a sustainable manner" based "on science and not emotion."

Controversial science: A Japanese ship hauls in a whale, probably a minke, in 2006.

Opposition to the research hunts is widespread. Even the IWC—essentially a diplomatic body with no enforcement power—has asked Japan to suspend its scientific whaling program. An IWC resolution notes that none of the Japanese research is necessary for managing whale populations. Nick Gales, a marine biologist with the Australian Antarctic Division in Kingston, Tasmania, says the scientific rationale for killing whales is "nonsense." The International Fund for Animal Welfare in Tokyo is one of many advocacy groups to oppose the lethal research.

The long-simmering controversy came to an angry boil this past November when Japanese whalers set out to hunt humpbacks in the Southern Ocean Sanctuary to study whether they are competing with minke whales for food. Australia led the opposition to the hunt; it announced that it would send planes and a ship to monitor Japanese whalers. Humpback researchers scoffed. "There's nothing that we need to know about humpback whales that requires using lethal techniques," says the Dolphin Institute's Lou Herman.

Japanese fishing authorities said they would hold off—for now—and not kill any humpbacks before the IWC meets in June. U.S. Commerce Secretary Carlos Gutierrez said, "we applaud Japan's decision as an act of goodwill toward the International Whaling Commission." ***—V.M.***

When it's time to breed, humpbacks make the longest migrations of any mammal—5,000 miles or more one way—traveling from the poles to the tropics in as little as six weeks. Some 5,000 humpbacks gather off Hawaii each breeding season, which lasts from December to May. Other breeding sites are in the warm coastal waters of Australia; Fiji, Tonga and other South Pacific islands; the east and west coasts of Africa; the West Indies; and the tropical parts of the Americas.

Photo records of humpback flukes—which are collected by other teams of humpback researchers around the world as well as Herman and Pack—have revealed a greater degree of flexibility in the whales' wanderings than previously imagined. Instead of heading north to Alaska from Hawaii, some whales cross the Pacific Ocean and end up in Japan. And researchers have been following some whales for so long they've seen young calves grow up and have calves of their own. Starting at about age 5, females give birth every two to three years. Pregnancy lasts nearly a year, and the calves nurse for about ten months. Mother and calf travel to their feeding grounds together, a journey that teaches the calf the annual migration route.

Even male humpbacks are more gregarious and social than their nomadic lifestyle might suggest. Males sometimes form temporary alliances while breeding and feeding, and at times both sexes work together to corral fish for feeding. "They're intelligent creatures," says Herman.

Herman has been keeping an eye on Hawaii's humpbacks since 1975. That was the year when "someone mentioned to me that they'd seen humpbacks here, offshore, which was a real surprise," he recalls onboard the *Kohola II*. (The boat's name is the Hawaiian word for humpback.) "So my wife and I chartered a helicopter. From the air, we spotted a few pods. No one knew there were any humpbacks in these waters until our report." The last mention of humpbacks in Hawaii had been decades earlier. So many of the animals had been slaughtered that they'd all but vanished from local waters.

HUMPBACKS WERE NEARLY hunted to extinction. Harvested in a limited way by coastal peoples for thousands of years, they became a prime target for commercial whalers in the 1800s. Whale oil was as highly prized then as petroleum is today. The northern right whale had been nearly exterminated (because northern right whales, *Eubalaena glacialis,* float after being killed, whalers said the species was the "right whale" to hunt). And new technological advances—steam-powered ships and explosive har-

JEREMY SUTTON-HIBBERT / GREENPEACE; P. 61 MASA USHIODA / SEAPICS.COM

Humpbacks communicate by singing or even blowing bubbles (a videographer gets a close-up). The golf-ball-size tubercles on their jaws are connected to nerves and may help humpbacks sense their surroundings.

Songs From the Deep

Tuning in to why humpbacks sing

One of the most enchanting mysteries about humpback whales is their songs. Only the males are known to sing, although both males and females sound certain social calls while they're feeding, and calves make other calls when they're near their mothers.

The humpback's haunting songs are among the most complex animal vocalizations. They have a hierarchical syntax, one of the basic elements of language, according to recent studies. That is, they sing units of sound that together form a phrase. The phrases are repeated in patterns known as themes. Each song is composed of anywhere from two to nine themes, and the themes are sung in a specific order. Some phrases sound like the low moan of a cello, while others are more like the chirp of a songbird.

Initially, researchers thought the males sang to attract females. When scientists played the songs on underwater speakers, however, other males—not females—showed up. Still, that doesn't mean the females aren't listening. Some people speculate that the whale songs are best compared to those of birds—vocalizations that alert both males and females to a new guy in the neighborhood. Compounding matters, humpbacks sing not only at their breeding grounds but also during their long migrations.

Intriguingly, humpbacks in different populations sing entirely different songs from those elsewhere in the world. And the songs evolve: each year, a few whales in a breeding area add new elements to a song that other males then adopt. "Individuals don't seem to stand out for very long," says Adam Pack of the Dolphin Institute based in Honolulu.

I hear the song late in our whale-watching day. Lou Herman, also of the Dolphin Institute, stops the boat in the middle of a seemingly empty sea and kills the engine. Whale spouts shoot up in the distance. "Listen," he says.

From beneath the boat, a sighing, almost mournful sound rises into the air. It is surprisingly loud and has a yearning edge—a pipe player alone, sounding the plaintive notes of love? Or is he calling for a buddy to join him? Or singing to let all whales in Hawaii know that humpbacks rule?

"The songs fascinate everyone," says Herman. "We know now that all the males here sing the same song, and when they stop the song for this season, they'll pick it up again right where they left off next year. Why and how?" Herman gives a hands-up shrug. *—V.M.*

poons—made it possible for whalers to catch humpbacks efficiently. Demand grew during World War I, when European armies used glycerin from baleen whale oil to make explosives. Commercial whalers moved into feeding grounds near Antarctica where humpbacks, blue, Bryde's, fin and sei whales gathered each year in vast numbers. The whalers commenced a slaughter that continued until 1948, two years after the International Whaling Commission (IWC) was formed with 15 member states to regulate the whale harvest.

Based on whaling records, scientists estimate that whaling nations (primarily the United States, the United Kingdom, Norway and Australia) killed more than 250,000 humpback whales during the 20th century. Certain populations were so reduced that many scientists feared they would never recover. In 1966, the IWC enacted a worldwide moratorium on the commercial hunting of humpback whales, a ban the Soviet Union ignored for seven years. NOAA's Phil Clapham estimates that by 1973, the number of humpbacks remaining may have been "in the low thousands," down from half a million or more.

In 1986, with nearly every whale species hovering close to extinction, the IWC extended the moratorium to all commercial whaling. Only small communities that have traditionally depended on whale meat, such as the coastal Inuit peoples of Alaska and Greenland, are allowed to kill a limited number of the animals. Norway and Iceland have rejected the overall ban; they primarily hunt minke whales, a species that whalers ignored in the past because of its small size. In recent years, Japan has hunted minke, sperm, sei, fin and Bryde's whales under an IWC regulation that allows governments to take whales for scientific research.

Overall, the IWC's moratorium on whale hunting is regarded as one of the most successful conservation measures of the 20th century. At least some populations of gray, Bryde's, blue, bowhead, sei and fin whales are stable or increasing in number. The northern right whale still hasn't recovered, however, and the northwest Pacific population of gray whales numbers less than a hundred. Today, the worldwide population of humpback whales stands at around 70,000.

Citing the humpback population rebound, Japan's Fisheries Agency last November dispatched its whaling ships to the Antarctic's Southern Ocean Sanctuary to harpoon as many as 50 humpbacks annually. In December, after worldwide protests, it postponed the hunt (see sidebar on page 60).

Some humpback experts point out that it's not necessary to kill whales to study them. "We're trying to put a face on each humpback whale," says Pack. "We're building the individual life stories of each one we see—who they spend time with, when they have calves, where they travel."

ABOARD THE *Kohola II,* Pack straps on a snorkel and mask and climbs into the water. In one hand he totes a well-worn video camera; with the other hand he strokes out to the area where the pod disappeared. About five feet away from the spot, he gives us a thumbs up, then dives down to join the whales.

After a few minutes, Pack pops to the surface and signals to be picked up. "They're on their way up," he says, as Herman helps pull him aboard.

Dripping from his dive, Pack explains what he saw below: "The N.A. is about 80 feet down, and Whitehook is right below her, chasing off intruders. It's classic mate-guarding behavior. He's making big sweeps with his pectoral fins if any guy comes near her; and if a challenger approaches from the front, he leaves her and makes a head-on attack. He sculled backwards once to take a tail swipe at a secondary escort, and then he sidled up next to her and blew out a linear bubble trail. Right after that, she began surfacing, and everybody followed."

Most of the violent battles among the males take place underwater. Some fights are deadly, Pack says; one male's battered body was found near a competitive pod 12 years ago. The males lunge forward with open jaws to gouge or scrape a rival, use their heads as battering rams or bash each other with their pectoral fins and flukes.

When the pod resurfaces in the channel, two competitors are oozing blood from their bumpy jaws. Their injuries don't slow them down; they plunge back into the fray. Whitehook smashes a whale on his left with his lower jaw, whacks another with his pectoral fin, then rockets skyward while others crash and heave to get out of his way. Another sprays from its blowhole so close to the boat that a fine mist settles over us.

"Oh, great, whale snot on my camera lens," mutters one of the crew.

Researchers identify individual humpbacks by the black-and-white patterns on their flukes. Adam Pack (recording a whale's song) and co-workers have so closely monitored whales returning to Hawaii that they can identify the grown offspring of animals they first encountered years ago.

Whitehook continued his daredevil displays, but was his behavior a prelude to mating? "We wish we knew," says Herman. "We've traveled with many, many competitive pods, and we've both gone in the water and filmed them after a deep dive. But this behavior that you've seen today: does it mean that she'll choose Whitehook for her mate? Or does it mean that he's already mated with her? We don't know. We guess that he's the one she favors, since she lets him stay with her. Maybe one day, we'll be lucky."

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BEING FUNNY

How the pathbreaking comedian got his act together

BY STEVE MARTIN

IN THE LATE 1960S, comedy was in transition. The older school told jokes and stories, punctuated with the drummer's rimshot. Of the new school, Bill Cosby—one of the first to tell stories you actually believed were true—and Bob Newhart—who startled everyone with innovative, low-key delivery and original material—had achieved icon status. Mort Sahl tweaked both sides of the political fence with his college-prof delivery. George Carlin and Richard Pryor, though very funny, were still a few years away from their final artistic breakthroughs. Lenny Bruce had died several years earlier, fighting both the system and drugs, and his work was already in revival because of his caustic brilliance that made authority nervous. Vietnam, the first televised war, split the country, and one's left or right bent could be recognized by haircuts and clothes. The country was angry, and so was comedy, which was addressed to insiders. Cheech and Chong spoke to the expanding underground by rolling the world's largest doobie on film. There were exceptions: Don Rickles seemed to glide over the generation gap with killer appearances on "The Tonight Show," and Johnny Carson remained a gentle satirist while maintaining a nice glossary of naughty-boy breast jokes. Tim Conway and Harvey Korman, two great comic sketch actors working for the affable genius Carol Burnett, were deeply funny. The television free-for-all called "Laugh-In" kept its sense of joy, thanks in part to Goldie Hawn's unabashed goofiness and producer George Schlatter's perceptive use of

her screw-ups, but even that show had high political content. In general, however, a comedian in shackles for indecent language, or a singer's arrest for obscene gestures, thrilled the growing underground audience. Silliness was just not appropriate for hip culture. It was this circumstance that set the stage for my success eight years later.

IN A COLLEGE PSYCHOLOGY CLASS, I had read a treatise on comedy explaining that a laugh was formed when the storyteller created tension, then, with the punch line, released it. I didn't quite get this concept, nor do I still, but it stayed with me and eventually sparked my second wave of insights. With conventional joke telling, there's a moment when the comedian delivers the punch line, and the audience knows it's the punch line, and their response ranges from polite to uproarious. What bothered me about this formula was the nature of the laugh it inspired, a vocal acknowledgment that a joke had been told, like automatic applause at the end of a song.

For his "first audience that wasn't friends or family," Martin (age 15 at a Disneyland magic shop in 1960) began telling jokes while shuffling Svengali decks and "performing the Cups and Balls trick."

A skillful comedian could coax a laugh with tiny indicators such as a vocal tic (Bob Hope's "But I wanna tell ya") or even a slight body shift. Jack E. Leonard used to punctuate jokes by slapping his stomach with his hand. One night, watching him on "The Tonight Show," I noticed that several of his punch lines had been unintelligible, and the audience had actually laughed at nothing but the cue of his hand slap.

These notions stayed with me until they formed an idea that revolutionized my comic direction: What if there were no punch lines? What if there were no indicators? What if I created tension and never released it? What if I headed for a climax, but all I delivered was an anticlimax? What would the audience do with all that tension? Theoretically, it would have to come out sometime. But if I kept denying them the formality of a punch line, the audience would eventually pick their own place to laugh, essentially out of desperation. This type of laugh seemed stronger to me, as they would be laughing at something *they chose*, rather than being told exactly when to laugh.

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To test my idea, I went onstage and began: "I'd like to open up with sort of a 'funny comedy bit.' This has really been a big one for me . . . it's the one that put me where I am today. I'm sure most of you will recognize the title when I mention it; it's the "Nose on Microphone" routine [pause for imagined applause]. And it's always funny, no matter how many times you see it."

I leaned in and placed my nose on the mike for a few long seconds. Then I stopped and took several bows, saying, "Thank you very much." "That's it?" they thought. Yes, that was it. The laugh came not then, but only after they realized I had already moved on to the next bit.

Now that I had assigned myself to an act without jokes, I gave myself a rule. Never let them know I was bombing: *this is funny, you just haven't gotten it yet*. If I wasn't offering punch lines, I'd never be standing there with egg on my face. It was essential that I never show doubt about what I was doing. I would move through my act without pausing for the laugh, as though everything were an aside. Eventually, I thought, the laughs would be playing catch-up to what I was doing. Everything would be either delivered in passing, or the opposite, an elaborate presentation that climaxed in pointlessness. Another rule was to make the audience believe that I thought I was fantastic, that my confidence could not be shattered. They had to believe that I didn't care if they laughed at all and that this act was going on with or without them.

I was having trouble ending my show. I thought, "Why not make a virtue of it?" I started closing with extended bowing, as though I heard heavy applause. I kept insisting that I needed to "beg off." *No, nothing, not even this ovation I am imagining, can make me stay*. My goal was to make the audience laugh but leave them unable to describe what it was that had made them laugh. In other words, like the helpless state of giddiness experienced by close friends tuned in to each other's sense of humor, *you had to be there*.

At least that was the theory. And for the next eight years, I rolled it up a hill like Sisyphus.

My first reviews came in. One said, "This so-called 'comedian' should be told that jokes are supposed to have punch lines." Another said I represented "the most serious booking error in the history of Los Angeles music."

"Wait," I thought, "let me explain my theory!"

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In Los Angeles, there were an exploding number of afternoon television talk shows: "The Della Reese Show," "The Merv Griffin Show," "The Virginia Graham Show," "The Dinah Shore Show," "The Mike Douglas Show" and my favorite, "The Steve Allen Show." Steve Allen had a vibrant comedy spirit, and you might catch him playing Ping-Pong while suspended from a crane a hundred feet in the air, or becoming a human tea bag by dropping himself in a tank of water filled with lemons. In his standard studio audience warm-up, when he was asked, "Do they get this show in Omaha?" Steve would answer, "They see it, but they don't get it."

On May 6, 1969, I wangled an audition for Steve Allen's two producers, Elias Davis and David Pollock. They accepted me with more ease than I expected, and for my first appearance on "The Steve Allen Show"—which was also my first appearance on television as a stand-up—I wore black pants and a bright blue marching-band coat I had picked up in a San Francisco thrift shop. Steve's introduction of me was adlibbed perfectly. "This next young man is a comedian, and . . . " he stammered, ". . . at first you might not get it"—he stammered again—"but then you think about it for a while, and you still don't get it"—stammer, stammer—"then, you might want to come up onstage and talk to him about it."

Writing for TV while moonlighting as a stand-up comic in the late 1960s, Martin (in a publicity photo) became a "full-blown hippie," sporting long hair and a "garish collection of turquoise jewelry."

The "Steve Allen" appearance went well—he loved the offbeat, and his cackle was enough to make any comedian feel confident. Seated on the sofa, though, I was hammered by another guest, Morey Amsterdam of "The Dick Van Dyke Show," for being unconventional. But I bore no grudge; I was so naive I didn't even know I had been insulted. The "Steve Allen" credit opened a few doors, and I bounced around all of the afternoon shows, juggling material, trying not to repeat myself.

I recently viewed a musty video of an appearance on "The Virginia Graham Show," circa 1970. I looked grotesque. I had a hairdo like a helmet, which I blow-dried to a puffy bouffant, for reasons I no longer understand. I wore a frock coat and a silk shirt, and my delivery was mannered, slow and self-aware. I had absolutely no authority. After reviewing the show, I was depressed for a week. But later, searching my mind for at least one redeeming quality in the performance, I became aware that not one joke was normal, that even though I was the one who said the lines, I did not know what was coming next. The audience might have thought what I am thinking now: "Was that terrible? Or was it good?"

From these television appearances, I got a welcome job in 1971 with Ann-Margret, five weeks opening the show for her at the International Hilton in Vegas, a huge, unfunny barn with sculptured pink cherubs hanging from the corners of the proscenium. Laughter in these poorly designed places rose a few feet into the air and dissipated like steam, always giving me the feeling I was bombing. One night, from my dressing room, I saw a vision in white gliding down the hall—a tall, striking woman, moving like an apparition along the backstage corridor. It turned out to be Priscilla Presley, coming to visit Ann-Margret backstage after having seen the show. When she turned the corner, she revealed an even more indelible presence walking behind her. Elvis. Dressed in white. Jet-black hair. A diamond-studded buckle.

When Priscilla revealed Elvis to me, I was also revealed to Elvis. I'm sure he noticed that this 25-year-old stick figure was frozen firmly to the ground. About to pass me by, Elvis stopped, looked at me and said in his beautiful Mississippi drawl: "Son, you have an ob-leek sense of humor." Later, after his visit with Ann-Margret, he stopped by my dressing room and told me that he, too, had an oblique sense of humor—which he did—but that his audience didn't get it. Then he said, "Do you want to see my guns?" After emptying the bullets into his palm, he showed me two pistols and a derringer.

The plum television appearance during the '60s and '70s was "The Tonight Show Starring Johnny Carson." Bob Shayne, who in the late '60s booked "The Steve Allen Show," had moved over to "The Tonight Show" and mentioned me to its producer, Freddy De Cordova. Bob showed Freddy a kinescope of my appearance on "The Steve Allen Show," and Fred replied, "I don't think he's for us." But Bob persisted, and Johnny saw the kinescope and said, "Let's give him a try." I was booked on the show in October 1972.

There was a belief that one appearance on "The Tonight

WILLIAM E. MCEUEN / SCRIBNER

Show" made you a star. But here are the facts. The first time you do the show, nothing. The second time you do the show, nothing. The sixth time you do the show, someone might come up to you and say, "Hi, I think we met at Harry's Christmas party." The tenth time you do the show, you could conceivably be remembered as being seen somewhere on television. The 12th time you do the show, you might hear, "Oh, I know you. You're that guy."

But I didn't know that. Before the show, as I stood in the backstage darkness behind the curtain of "The Tonight Show," hearing the muffled laughter while Johnny spoke and waiting for the tap on the shoulder that would tell me I was on, an italicized sentence ticker-taped through my head: "*I am about to do 'The Tonight Show.'*" Then I walked out onstage, started my act and thought, "*I am doing 'The Tonight Show.'*" I finished my act and thought, "*I have just done 'The Tonight Show.'*" What happened while I was out there was very similar to an alien abduction: I remember very little of it, though I'm convinced it occurred.

I did the show successfully several times. I was doing material from my act, best stuff first, and after two or three appearances, I realized how little best stuff I had. After I'd gone through my stage material, I started doing some nice but oddball bits such as "Comedy Act for Dogs" (first done on "Steve Allen"), in which I said, "A lot of dogs watch TV, but there's really nothing on for them, so call your dog over and let him watch because I think you're going to see him crack up for the first time." Then I brought out four dogs "that I can perform to so I can get the timing down." While I did terrible canine-related jokes, the dogs would walk off one at a time, with the last dog lifting his leg on me. The studio audience saw several trainers out of camera range, making drastic hand signals, but the home TV audience saw only the dogs doing their canine best.

Another time I claimed that I could read from the phone book and make it funny. I opened the book and droned the names to the predictable silence, then I pretended to grow more and more desperate and began to do retro shtick such as cracking eggs on my head. I got word that Johnny was not thrilled, and I was demoted to appearing with guest hosts, which I tried not to admit to myself was a devastating blow.

Despite mixed reviews, Martin (squeezing bananas in a Los Angeles club in 1968) kept at his new approach. "As I continued to work," he writes, "my material grew; I came up with odd little gags."

FOR THE NEXT FEW YEARS, I was on the road with an itinerary designed by the Marquis de Sade. But there was a sexy anonymity about the travel; I was living the folkie myth of having no ties to anyone, working small clubs and colleges in improvised folk rooms that were usually subterranean. In this netherworld, I was free to experiment. There were no mentors to tell me what to do; there were no guidebooks for doing stand-up. Everything was learned in practice, and the lonely road, with no critical eyes watching, was the place to dig up my boldest, or dumbest, ideas and put them onstage. After a show, preoccupied by its success or failure, I would return to my motel room and glumly watch the three TV channels sign off the air at 11:30, knowing I had at least two more hours to stare at the ceiling before the adrenaline eased off and I could fall asleep.

When necessary, I could still manage to have a personality, and sometimes I was rescued by a local girl who actually liked me. Occasionally the result was an erotic tryst enhanced by loneliness. Perhaps the women saw it as I did, an encounter free from obligation: the next day I would be gone. I had also refined my pickup technique. If I knew I would be returning to a club, I tweaked my hard-learned rule, "Never hit on a waitress the first night," to "Never hit on a waitress for six months." I came off as coolly reserved, as I would harmlessly flirt on my first visit; by my next visit, everything was in place. Soon the six months caught up with me, and I always had someone I could latch onto as I rolled from town to town.

In Los Angeles one week, I opened the show for Linda Ronstadt at the Troubadour club; she sang barefoot on a raised stage and wore a silver lamé dress that stopped a millimeter below her panties, causing the floor of the club to be slick with drool. Linda and I saw each other for a while, but I was so intimidated by her talent and street smarts that, after the ninth date, she said, "Steve, do you often date girls and not try to sleep with them?" We parted chaste.

At the end of my closing-night show at the Troubadour, I stood onstage and took out five bananas. I peeled them, put one on my head, one in each pocket and squeezed one in each hand. Then I read the last line of my latest bad review: "Sharing the bill with Poco this

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week is comedian Steve Martin . . . his 25-minute routine failed to establish any comic identity that would make the audience remember him or the material." Then I walked off the stage.

THE CONSISTENT WORK enhanced my act. I learned a lesson: it was easy to be great. Every entertainer has a night when everything is clicking. These nights are accidental and statistical: like lucky cards in poker, you can count on them occurring over time. What was hard was to be *good*, consistently good, night after night, no matter what the circumstances. Performing in so many varied situations made every predicament manageable, from Toronto, where I performed next to an active salad bar, to the well-paying but soul-killing Playboy Clubs, where I was almost but not quite able to go over. But as I continued to work, my material grew; I came up with odd little gags such as "How many people have never raised their hands before?"

"I cut my hair, shaved my beard and put on a suit," writes Martin (performing at a Nashville club circa 1975). "Between 1973 and 1975, my one-man vaudeville show turned fully toward the surreal."

Because I was generally unknown, I was free to gamble with material, and there were a few evenings when crucial mutations affected my developing act. At Vanderbilt University in Nashville, I played for approximately 100 students in a classroom with a stage at one end. The show went fine. However, when it was over, something odd happened. The audience didn't leave. The stage had no wings, no place for me to go, but I still had to pack up my props. I indicated that the show had ended, but they just sat there, even after I said flatly, "It's over." They thought this was all part of the act, and I couldn't convince them otherwise. Then I realized there were no exits from the stage and that the only way out was to go through the audience. So I kept talking. I passed among them, ad-libbing comments along the way. I walked out into the hallway, but they followed me there too. A reluctant pied piper, I went outside onto the campus, and they stayed right behind me. I came across a drained swimming pool. I asked the audience to get into it—"Everybody into the pool!"—and they did. Then I said I was going to swim across the top of them, and the crowd knew exactly what to do: I was passed hand over hand as I did the crawl. That night I went to bed feeling I had entered new comic territory. My show was becoming something else, something free and unpredictable, and the doing of it thrilled me, because each new performance brought my view of comedy into sharper focus.

The act tightened. It became more physical. It was true I couldn't sing or dance, but singing *funny* and dancing *funny* were another matter. All I had to do was free my mind and start. I would abruptly stop the show and sing loudly, in my best lounge-singer voice, "Grampa bought a rubber." Walking up to the mike, I would say, "Here's something you don't often see," and I'd spread my mouth wide with my fingers and leap into the air while screaming. Or, invoking a remembered phrase from my days working in a magic shop, I would shout, "Uh-oh, I'm getting happy feet!" and then dance uncontrollably across the stage, my feet moving like Balla's painting of a Futurist dog, while my face told the audience that I wanted to stop but couldn't. Closing the show, I'd say, "I'd like to thank each and every one of you for coming here tonight." Then I would walk into the audience and, in fast motion, thank everyone individually.

The new physicality brought an unexpected element into the act: precision. My routines wove the verbal with the physical, and I found pleasure trying to bring them in line. Each spoken idea had to be physically expressed as well. My teenage attempt at a magician's grace was being transformed into an awkward comic grace. I felt as though every part of me was working. Some nights it seemed that it wasn't the line that got the laugh, but the tip of my finger. I tried to make voice and posture as crucial as jokes and gags. Silence, too, brought forth laughs. Sometimes I would stop and, saying nothing, stare at the audience with a look of mock disdain, and on a good night, it struck us all as funny, as if we were in on the joke even though there was no actual joke we could point to. Finally, I understood an E. E. Cummings quote I had puzzled over in college: "Like the burlesque comedian, I am abnormally fond of that precision which creates movement." Precision was moving the plot forward, was filling every moment with content, was keeping the audience engaged.

The act was becoming simultaneously smart and stupid. My version of smart was to imbue a hint of conceptualism into the whole affair: my singalong had some funny lyrics,

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but it was also impossible to sing along with. My version of stupid: "Oh, gosh! My shoelace is untied!" I would bend down, see that my shoelace was not untied, stand up and say, "Oh, I love playing jokes on myself!"

I had the plumber joke, which was impossible to understand even for plumbers: "OK, I don't like to gear my material to the audience, but I'd like to make an exception, because I was told that there is a convention of plumbers in town this week—I understand about 30 of them came down to the show tonight—so before I came out, I worked up a joke especially for the plumbers. Those of you who aren't plumbers probably won't get this and won't think it's funny, but I think those of you who are plumbers will really enjoy this. This lawn supervisor was out on a sprinkler maintenance job, and he started working on a Findlay sprinkler head with a Langstrom seven-inch gangly wrench. Just then this little apprentice leaned over and said, 'You can't work on a Findlay sprinkler head with a Langstrom seven-inch wrench.' Well, this infuriated the supervisor, so he went and got Volume 14 of the Kinsley manual, and he reads to him and says, 'The Langstrom seven-inch wrench can be used with the Findlay sprocket.' Just then the little apprentice leaned over and says, 'It says sprocket, not socket!' [Worried pause.] "Were these plumbers supposed to be here this show?"

Martin (on NBC's "Midnight Special" in 1973) says he honed routines that were "funny now, while the audience was watching" but also "funny later, when the audience was home and thinking about it."

AROUND THIS time I smelled a rat. The rat was the Age of Aquarius. Though the era's hairstyles, clothes and lingo still dominated youth culture, by 1972 the movement was tired and breaking down. Drugs had killed people, and so had Charles Manson. The war in Vietnam was near its official end, but its devastating losses had embittered and divided America. The political scene was exhausting, and many people, including me, were alienated from government. Murders and beatings at campus protests weren't going to be resolved by sticking a daisy into the pointy end of a rifle. Flower Power was waning, but no one wanted to believe it yet, because we had all invested so much of ourselves in its message. Change was imminent.

I cut my hair, shaved my beard and put on a suit. I stripped my act of all political references. To politics I was saying, "I'll get along without you very well. It's time to be funny." Overnight, I was no longer at the tail end of an old movement but at the front end of a new one. Instead of looking like another freak with a crazy act, I now looked like a visitor from the straight world who had gone seriously awry. The act's unbridled nonsense was taking the audience—and me—on a wild ride, and my growing professionalism, founded on thousands of shows, created a subliminal sense of authority that made members of the audience feel they weren't being had.

Between 1973 and 1975, my one-man vaudeville show turned fully toward the surreal. I was linking the unlinkable, blending economy and extravagance, non sequiturs with the conventional. I was all over the place, sluicing the gold from the dirt, honing the edge that confidence brings. I cannot say I was fearless, because I was acutely aware of any audience drift, and if I sensed trouble, I would swerve around it. I believed it was important to be funny now, while the audience was watching, but it was also important to be funny later, when the audience was home and thinking about it. I didn't worry if a bit got no response, as long as I believed it had enough strangeness to linger. My friend Rick Moranis (whose imitation of Woody Allen was so precise that it made Woody seem like a faker) called my act's final manifestation "anti-comedy."

IN FLORIDA one night, I was ready to put my experience at Vanderbilt into effect. The night was balmy and I was able to take the audience outside into the street and roam around in front of the club, making wisecracks. I didn't quite know how to end the show. First I started hitchhiking; a few cars passed me by. Then a taxi came by. I hailed it and got in. I went around the block, returned and waved at the audience—still standing there—then drove off and never came back. The next morning I received one of the most crucial reviews of my life. John Huddy, the respected entertainment critic for the *Miami Herald*, devoted his entire column to my act. Without qualification, he raved in paragraph after paragraph, starting with HE PARADES HIS HILARITY RIGHT OUT INTO THE STREET, and concluded with: "Steve Martin is the brightest, cleverest, wackiest new comedian around." Oh, and the next night the club owner made sure

NBC UNIVERSAL PHOTO BANK

all tabs had been paid before I took the audience outside.

Roger Smith had told me that when he came to Hollywood from El Paso to be an actor, he had given himself six months to get work. The time elapsed, and he packed up his car, which was parked on Sunset Boulevard, where his final audition would be. Informed that he was not right for the job, he went out and started up his car. He was about to pull away, away to El Paso, when there was a knock on his windshield. "We saw you in the hall. Would you like to read for us?" the voice said. He was then cast as the star of the hit television show "77 Sunset Strip." My review from John Huddy was the knock on the window just as I was about to get in my car and drive to a metaphorical El Paso, and it gave me a psychological boost that allowed me to nix my arbitrarily chosen 30-year-old deadline to reenter the conventional world. The next night and the rest of the week the club was full, all 90 seats.

I continued to appear on "The Tonight Show," always with a guest host, doing material I was developing on the road. Then I got a surprise note from Bob Shayne: "We had a meeting with Johnny yesterday, told him you'd been a smash twice with guest hosts, and he agrees you should be back on with him. So I think that hurdle is over." In September 1974, I was booked on the show with Johnny.

"Subliminally, I was endorsed," says Martin (with Sammy Davis Jr. and Johnny Carson in 1974), when viewers at home caught "The Tonight Show" host cracking up during Martin's 16th appearance.

This was welcome news. Johnny had comic savvy. The daytime television hosts, with the exception of Steve Allen, did not come from comedy. I had a small routine that went like this: "I just bought a new car. It's a prestige car. A '65 Greyhound bus. You know you can get up to 30 tons of luggage in one of those babies? I put a lot of money into it. . . . I put a new dog on the side. And if I said to a girl, 'Do you want to get in the back seat?' I had, like, 40 chances." Etc. Not great, but at the time it was working. It did, however, require all the pauses and nuance that I could muster. On "The Merv Griffin Show," I decided to use it for panel, meaning I would sit with Merv and pretend it was just chat. I began: "I just bought a new car. A '65 Greyhound bus." Merv, friendly as ever, interrupted and said, "Now, why on earth would you buy a Greyhound bus?" I had no prepared answer; I just stared at him. I thought, "Oh my God, because it's a comedy routine." And the bit was dead. Johnny, on the other hand, was the comedian's friend. He waited; he gave you your timing. He lay back and stepped in like Ali, not to knock you out but to set you up. He struggled with you too and sometimes saved you.

I was able to maintain a personal relationship with Johnny over the next 30 years, at least as personal as he or I could make it, and I was flattered that he came to respect my comedy. On one of my appearances, after he had done a solid impression of Goofy the cartoon dog, he leaned over to me during a commercial and whispered prophetically, "You'll use everything you ever knew." He was right; 20 years later I did my teenage rope tricks in the movie ¡*Three Amigos*!

Johnny once joked in his monologue: "I announced that I was going to write my autobiography, and 19 publishers went out and copyrighted the title *Cold and Aloof.*" This was the common perception of him. But Johnny was not aloof; he was polite. He did not presume intimate relationships where there were none; he took time, and with time grew trust. He preserved his dignity by maintaining the personality that was appropriate for him.

Johnny enjoyed the delights of split-second timing, of watching a comedian squirm and then rescue himself, of the surprises that can arise in the seconds of desperation when the comedian senses that his joke might fall to silence. For my first show back, I chose to do a bit I had developed years earlier. I speed-talked a Vegas nightclub act in two minutes. Appearing on the show was Sammy Davis Jr., who, while still performing energetically, had also become a historic showbiz figure. I was whizzing along, singing a four-second version of "Ebb Tide," then saying at lightning speed, "Frank Sinatra personal friend of mine Sammy Davis Jr. personal friend of mine Steve Martin I'm a personal friend of mine too and now a little dancin'!" I started a wild flail, which I must say was pretty funny, when a showbiz miracle occurred. The camera cut away to a dimly lit Johnny, just as he whirled up from his chair, doubling over with laughter. Suddenly, subliminally, I was endorsed. At the end of the act, Sammy came over and hugged me. I felt like I hadn't been hugged since I was born.

This was my 16th appearance on the show, and the first one I could really call a smash. The next day, elated by my success, I walked into an antiques store on La Brea. The woman behind the counter looked at me.

"Are you that boy who was on "The Tonight Show" last night?"

"Yes," I said.

"Yuck!" she blurted out.

STEVE MARTIN COLLECTION / SCRIBNER

To see Steve Martin on "The Tonight Show," go to Smithsonian.com/martin

PORTRAITS *of*

Sarah Vaughan (opposite: in 1950) topped jazz polls in the 1950s. Common cause: Rep. Adam Clayton Powell Jr., left, and Stokely Carmichael (in Washington, D.C. c. 1966).

RESISTANCE

The inaugural show of the National Museum of African American History and Culture focuses on people who battled injustice, whether from the boxing ring, the bandstand or Congress **BY LUCINDA MOORE**

Sarah Vaughan looks enraptured—

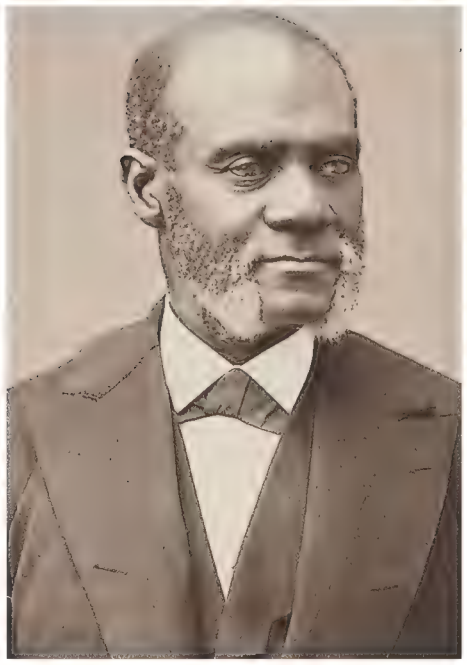
eyes closed, lips parted, hands held at her chest in an almost prayerful gesture. This photograph of the late "Divine One," nicknamed for her otherworldly voice, introduces visitors to an exhibition of 100 black-and-white photographs of African-American activists, artists, scientists, authors, musicians and athletes at the National Portrait Gallery in Washington, D.C. (through March 2). A scaled-down version of the exhibition, co-sponsored by the International Center for Photography in New York City, will travel to several cities starting in June.

Drawn from the gallery's collections, the photographs span the years from 1856 to 2004 and make up the inaugural exhibition of the Smithsonian's National Museum of African American History and Culture, which was established by Congress in 2003 but won't have a home of its own before 2015. The exhibition title, "Let Your Motto Be Resistance," is from an 1843 speech to the National Convention of Colored Citizens in Buffalo, New York, by Henry Highland Garnet, a noted clergyman, activist and former slave. "Strike for your lives and liberties," Garnet urged his listeners. "Rather die freemen than live to be slaves. . . . Let your motto be resistance! Resistance! RESISTANCE!"

Viewing the portraits, which were selected by photography scholar Deborah Willis of New York University and curators Ann Shumard and Frank H. Goodyear III, a visitor is made aware of the many forms resistance can take. Some of the subjects were former slaves (Garnet, Sojourner Truth and a man known only as Gordon, whose shirtless back bears the shocking scars of many lashings). Some overcame endemic racism (bluesman "Mississippi" John Hurt and sculptor William Edmondson). Others sacrificed their very lives: Octavius Catto was murdered in 1871 at age 32 in Philadelphia's first election in which black citizens were allowed to vote; in a photograph likely taken that year, he appears strikingly handsome and full of promise. Martin Luther King Jr. is represented twice. In a sunny 1956 picture with his wife, Coretta, he holds

Acclaimed for his paintings about the African-American experience, Jacob Lawrence (left: in 1959) helps people see "how their past shapes who they are," says museum director Lonnie Bunch. Rock guitarist and bandleader Jimi Hendrix (in 1967) brought blues-inspired psychedelic music into the mainstream.

ARNOLD NEWMAN / GETTY IMAGES; LINDA MCCARTNEY / NPG, SI; P. 72 JOSEF BREITENBACH / NPG, SI; P. 73 GEORGE TAMES / THE NEW YORK TIMES / REDUX



Former slave Henry Highland Garnet (above: c. 1877) urged resistance. Martin Luther King Jr. (with wife Coretta and daughter Yolanda in Montgomery, 1956) and Malcolm X (in New York City in 1962 publicizing alleged police brutality) continued the fight.

JAMES U. STEAD / NPG, SI; DAN WEINER / NPG, SI; GORDON PARKS / NPG, SI

baby Yolanda in Montgomery around the time he was leading a boycott to end segregation on Alabama buses. At his funeral in 1968, his daughter Bernice looks into his open coffin with apparent horror.

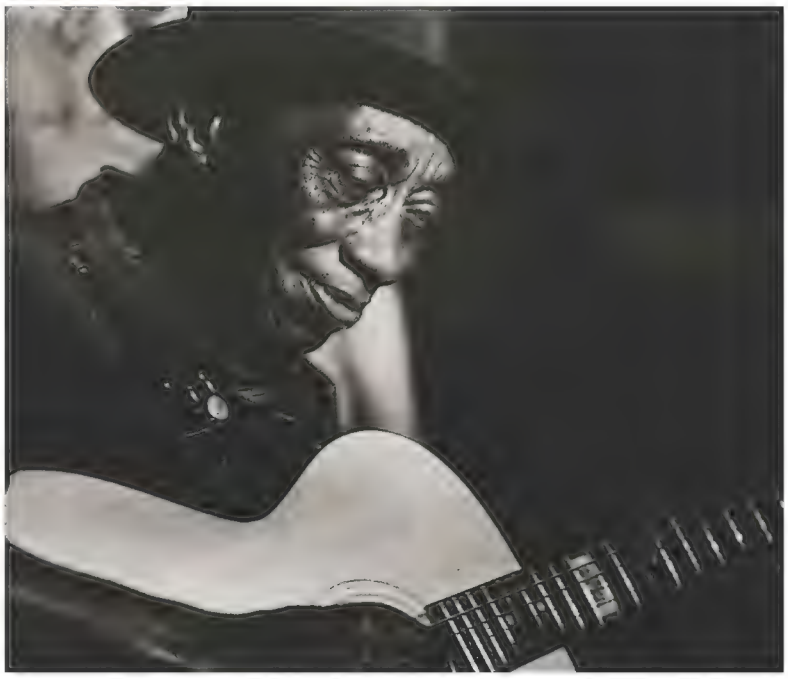
Numerous themes connect the lives of two other men whose activism shaped the 1960s. In one photograph, Malcolm X is selling newspapers on a New York City street for the Nation of Islam in 1962, two years before he severed ties with the black-separatist religious organization and three years before he was assassinated. "This image tells us that because of his commitment to the cause, Malcolm had the ability to be of the community, or of the organization, but still apart from it," says Lonnie Bunch, founding director of the National Museum of African American History and Culture. Muhammad Ali is framed almost heroically in a photograph from 1966, a year before the World Boxing Association stripped him of his heavyweight title and he was convicted for refusing induction into the Army on religious grounds during the Vietnam War. "The sense of courage and isolation that is the life of Ali is captured in this picture," says Bunch. "It speaks volumes about his ability to take a path other people wouldn't take." Indeed, Ali's determined stance during four years of legal battles at the height of his athletic career—the Supreme Court overturned his conviction and he later regained his title—would largely enhance his status as an international hero. Both the Malcolm X and Ali photographs were taken by Gordon Parks, who died in 2006, and who is himself the subject of a portrait. Parks, standing with a camera in 1945 at age 33, would mark the coming decades as a photographer, movie director, novelist and musician.

Most of the artists in the exhibition found creative ways to express adversity, celebrate their culture and expand their respective genres. A 1944 picture of tenor saxophonist Lester Young soloing with the Count Basie band is a discovery. Linda McCartney's playful 1967 portrait of guitarist Jimi Hendrix is, well, electric. In 1978, Helen Marcus captured a pensive Toni Morrison, whose novels ingeniously intertwine the wealth of black culture and the heart-rending power of black history.

"When I looked at these images, I saw almost the whole history of race in America," Bunch says. "I saw the pain of slavery and the struggle for civil rights, but I also saw the

Lorraine Hansberry (left: c. 1960) became the first African-American playwright to win the New York Drama Critics' Circle Award, for 1959's *A Raisin in the Sun*. Novelist Toni Morrison (in 1978) was awarded a Nobel Prize in Literature in 1993 for works of "visionary force and poetic import."

DAVID MOSES ATTIE / NPG, SI; HELEN MARCUS



CHARMIAN READING / NPG, SI; GORDON PARKS / NPG, SI; LOUISE DAHL-WOLFE / COLLECTION CENTER FOR CREATIVE PHOTOGRAPHY, UNIVERSITY OF ARIZONA / ©1989 ARIZONA BOARD OF REGENTS

Farmer "Mississippi" John Hurt (above: in 1966) inspired a blues revival. Self-taught Nashville sculptor William Edmondson (below right: c. 1933-36) was the first African-American given a solo show at New York's Museum of Modern Art. Heavyweight champ Muhammad Ali (in 1966, a year before boxing authorities revoked his title for refusing military service) was said to be the world's most recognizable individual.

optimism and resiliency that has led to an America that is better than America was when we were born. It is very powerful to remember." Ultimately, the story these photographs tell is of the will of African-Americans who allowed no legal, physical or psychological depredations to suppress the joy and artistry inside them—and who changed the world in the process.

Perhaps the most engaging moment is provided by *New York Times* photographer George Tames. In his photograph of New York City's first black congressman, Adam Clayton Powell Jr., and the young black-power advocate Stokely Carmichael, the two are laughing in the corridors of a Congressional office building circa 1966. The colorful, controversial Powell had spent decades working to end segregation and to pass civil rights legislation, while Carmichael was known for the fiery speeches he delivered principally on the streets. The image can be read to suggest that no matter how divergent the strategies of African-Americans engaged in the fight for equality, most were united by a dream more powerful than their differences.

LUCINDA MOORE *is an associate editor of* SMITHSONIAN.

For an interview with the curator, go to Smithsonian.com/resistance

Heaven Scent

A 600-year-old pharmacy started by Florentine monks is now a trendy global marketer of perfumes and medieval elixirs

BY MISHAL HUSAIN

PHOTOGRAPHS BY SCOTT S. WARREN

AMONG FLORENCE'S CHURCHES, Santa Maria Novella is often overlooked: it lacks the grandeur of the Duomo and the poignancy of Santa Croce, where Michelangelo and Galileo are entombed. And while its Renaissance frescoes may rival those of San Marco, its location in a seedy neighborhood near the city's main train station keeps it off the radar of many visitors to the City of Lilies.

But as home to one of the world's oldest pharmacies, Santa Maria Novella boasts an attraction no other church in Italy can match. Dominican monks began concocting herbal remedies here in the 13th century, in the time of Giotto and Dante. Today, the Officina Profumo-Farmaceutica di Santa Maria Novella still sells traditional elixirs, along with more contemporary skin-care products, oils and perfumes.

From the outside, the church offers little sign of the aromatic riches within. But around the corner from its main entrance, an enormous wooden door opens into another world, where the strong, sweet fragrance of flowers and essential oils wafts through the pharmacy's historic rooms. The monks' simple apparatus for distilling flower water rests inside wooden cabinets, flanked by old containers used for lotions and potions, lists of ingredients and even the monks' original recipe ledgers. Merchandise lines the walls of the dimly lit, frescoed rooms—all manner of soaps, sachets and scents, many made according to ancient formulas.

The Dominicans, an order devoted to poverty and charity, first arrived in Florence in 1219, in the last years of Saint Dominic, who would die in Bologna in 1221. His followers took over a church, then called Santa Maria delle Vigne, and began the process of transforming it into a monastery. At the time, the Dominicans were engaged in fierce competition with the Franciscans for the loyalty of medieval Florentines in what would soon become one of Europe's wealthiest and most powerful cities. Their cause was helped by a Verona-born Dominican, later known as Saint Peter the Martyr, who attracted huge crowds to his sermons at Santa Maria Novella, as Santa Maria delle Vigne had come to be known.

The old pharmacy of Santa Maria Novella, which was used as the sales and showroom from 1612 to 1848, is now an herbal shop. It retains its 17th-century décor and furnishings.

By 1381, the Dominicans were operating an infirmary there, with herbal remedies made by the monks themselves. Among the first distillates was rose water, a simple essence prescribed as an antiseptic to clean houses after an outbreak of plague. (It remains on the pharmacy's shelves today, although it's now more likely to be used for perfume or aromatherapy.)

Also among the early creations were tonics reflecting the sensibility of the times: the imaginatively named "Vinegar of the Seven Thieves," for example, was a popular remedy for women suffering from "fainting fits." The vinegar is still available for those in need of a quick pick-me-up. Also available to Florentine ladies was a concoction designed to calm "hysterical women." It, too, is still on the shelves, bearing the innocuous name Santa Maria Novella Water—now recommended for its "antispasmodic properties."

By the late 15th century, Florence was plunged into turmoil, with political attacks on the Medici dynasty spurred by the fiery preaching of the Dominican monk Savonarola—who denounced all vice and exhorted the citizens of Florence to burn their finery in a "bonfire of vanities." The pharmacy's nostrums, however, were mostly medicinal, and the monks quietly labored on. By the mid-16th century, relative calm had returned to the city under the rule of Cosimo de' Medici.

By then the monastery's pharmaceutical activities were being run as a separate business, managed by a layman and, it appears, were profitable. One entry in church records reports a large investment in vases, stoppers and pestles. The operation's manufacture of perfumes was apparently key to winning the allegiance of its most famous customer, Catherine de' Medici.

She had been born in Florence in 1519, and at age 14 famously became the bride of Henry, Duke of Orleans, the future king of France. She proved a legendary figure both for her political intrigues and her love of novelty: she is credited with promoting, in the French Court, innovations ranging from the sidesaddle to the handkerchief—even tobacco. The pharmacy created a new fragrance for her, a perfume that became known as *acqua della regina*, or "water of the queen." In due course, Catherine's patronage proved the making of the place.

The growth of the business was not welcomed by all; unease among some monks that the sweet smell of success might distract from the Christian pieties led to a temporary shutdown of the production of medicines in the early 1600s. But manufacture resumed in 1612, for a run of two and a half centuries. In 1866 the Italian state confiscated all church property. The move could have been the pharmacy's death knell but for the vision of the last monk to act as its director, Damiano Beni. In a deft move, he handed over control of the enterprise to his layman nephew, who eventually bought it from the state. His descendants remain involved in the business today.

As a secular endeavor, the pharmacy could fully exploit the trends of the times. In the 1700s, it had expanded its product line from distilling medicines and perfumes to manufacturing alcohol. In the 19th century, as alcohol-laden patent medicines and tonics became all the rage in the United States, the pharmacy's liqueur, Alkermes—advertised as a way to "revive weary and lazy spirits"—became a top seller.

Today the pharmacy still occupies its historic quarters, but it has expanded into an international concern, with stores in New York, Los Angeles and Tokyo. Eight years ago it opened a small factory two miles away, where the monks' ancient techniques have been streamlined, but where much of the manufacturing continues to be done by hand. The factory can turn out 500 bars of soap a day in any one of 25 varieties; each bar is then aged for a month before being chiseled by hand into its final shape.

For those who fancy themselves a modern-day Catherine de' Medici, the pharmacy produces a fragrance similar to the "water of the queen," although it now goes by the less regal name of Eau de Cologne Classica. Some 40 colognes, in fact, are offered, catering to a huge range of tastes. The current managing director, an urbane Florentine named Eugenio Alphandery, has expanded his clientele still further with a new fragrance, Nostalgia, based on his own passion—fast cars. A whiff of the cologne evokes nothing so much as leather seats, tires on a track and a hint of gasoline fumes.

Catherine de' Medici, where art thou?

MISHAL HUSAIN *is an anchor for BBC World and lives in London.* **SCOTT S. WARREN** *works out of Durango, Colorado.*

Learn more about the pharmacy's famous client Catherine de' Medici at Smithsonian.com/pharmacy

The pharmacy's neo-Gothic main salesroom, originally one of the monastery's chapels, was refurbished in 1848. Opposite: top, a worker prepares potpourri; bottom, the recipe for the pharmacy's Stomatico liqueur can be traced back to an 18th-century formula used to calm stomachs.

HOW DID A RENOWNED SCIENTIST WHO HAS DONE GROUNDBREAKING RESEARCH IN BRAZIL RUN AFOUL OF AUTHORITIES THERE?

BY JOSHUA HAMMER PHOTOGRAPHS BY CLAUDIO EDINGER

TRIALS OF A PRIMATOLOGIST

AT SEVEN O'CLOCK IN THE MORNING ON JUNE 15, 2007, THE BELL RANG AT THE FRONT GATE OF MARC VAN ROOSMALEN'S MODEST HOUSE ON THE OUTSKIRTS OF MANAUS, BRAZIL.

For van Roosmalen, a Dutch-born primatologist and Amazon adventurer who had been chosen one of *Time* magazine's "Heroes for the Planet" in 2000, that was a somewhat unusual event: visitors had lately become scarce. The 60-year-old scientist was dwelling in semi-isolation, having separated from his wife, become estranged from his two sons, lost his job at a Brazilian research institute and been charged with a raft of offenses, including misusing government property and violating Brazil's biopiracy laws. But things had begun to turn around for van Roosmalen: he had been exonerated in three successive trials and had even begun to talk optimistically about getting his old job back. In July, he was planning to travel on a research vessel up the Rio Negro, the Amazon's main tributary, with a group of biology students from the United States, his first such trip in years.

Van Roosmalen buzzed open the compound gate, he told me recently. Moments later, he said, five heavily armed federal police officers burst into the garden, bearing a warrant for his arrest. Then, as his 27-year-old Brazilian girlfriend, Vivi, looked on in horror, van Roosmalen says, police cuffed his hands behind his back and placed him in the back seat of a black Mitsubishi Pajero. Van Roosmalen asked where they were heading. It was only then, he says, that he learned that he had just been found guilty, in a criminal procedure conducted in his absence, of crimes ranging from keeping rare animals without a permit to illegal trafficking in Brazil's national patrimony, to the theft of government property. The sentence: 14 years and 3 months in prison.

Van Roosmalen's immediate destination was the Manaus public jail, a decrepit structure in the city center built at the height of the Amazon rubber boom a century ago. Regarded by human-rights groups as one of Brazil's most dangerous and overcrowded jails, it is filled with some of the Amazon's most violent criminals, including murderers, rapists, armed robbers and drug traffickers. According to van Roosmalen, he was tossed into a bare concrete cell with five other men considered likely to be killed by other inmates. His cellmates included two contract killers who spent their days in the windowless chamber smoking crack cocaine and sharing fantasies of rape and murder. Lying in his concrete bunk after dark, van Roosmalen would stare

Amazonas em Tempo

BIOPIRATARIA

Justiça Federal manda soltar pesquisador holandês

Depois de ter sido condenado a 14 anos de prisão e mais multa de 152 mil, TRF deu parecer favorável à soltura do holandês, ontem à tarde

Nilson Seiera e Elvis Chaves

O pesquisador holandês Marc Gerardus Maria Van Roosmalen, 60, foi colocado em liberdade, ontem à tarde, depois de passar 22 dias recolhido na Cadeia Pública Desembargador Raimundo Vidal Pessoa, Centro. Roosmalen, tido como um dos mais conhecidos e respeitados pesquisadores de primatas da região, estava preso desde o dia 15, quando foi condenado pela Justiça Federal a cumprir 14 anos de prisão e pagar R$ 152 mil de multa pelos crimes contra a fauna, biopirataria, contrabando de patrimônio científico e peculato, explicação dada por juiz que o julgou. A pena do holandês foi a primeira por crime de biopirataria imposta pela Justiça Federal brasileira.

O mandado foi cumprido

Van Roosmalen (opposite) was let out of jail this past August (left: "Federal justices order release of Dutch researcher"). "In the best light he was naive," says a colleague.

AMAZONAS EM TEMPO

up at the swastika carved into the bunk above his, listen to the crack-fueled rants of his cellmates and wonder if he would survive the night. John Chalmers, a 64-year-old British expatriate who visited van Roosmalen in jail in July, says he found the naturalist "in terrible shape: drawn, haggard, depressed. He was telling me how he'd seen prisoners have their necks snapped in front of him. He was frightened for his life."

For van Roosmalen, the journey into the depths of the Brazilian prison system marked the low point of a terrible fall from grace. At the height of his career, just five years earlier, the scientist had been hailed as one of the world's most intrepid field naturalists and a passionate voice for rain forest preservation. In his native Holland, where he is a household name, he received the country's highest environmental honor, the Order of the Golden Ark, from the Netherlands' Prince Bernhard, consort to Queen Juliana, in 1997; the National Geographic documentary *Species Hunter*, filmed in 2003, celebrated his adventurous spirit as he trekked up remote Amazonian tributaries in search of rare flora and fauna. Van Roosmalen claimed to have identified seven never-before-seen species of primates—including a dwarf marmoset and a rare orange-bearded titi monkey—along with a collarless, piglike peccary and a variety of plant and tree species. He had used these discoveries to promote his bold ideas about the Amazon's unique evolutionary patterns and to give momentum to his quest to carve these genetically distinct zones into protected reserves, where only research and ecotourism would be allowed. "Time after time after time, [van Roosmalen has contributed to] this sense that we're still learning about life on earth," says Tom Lovejoy, who conceived the public television series *Nature* and today is president of the H. John Heinz III Center for Science, Economics and the Environment in Washington, D.C.

Amazonas state remains Brazil's most pristine region. "All this," says van Roosmalen, "is now at risk."

But van Roosmalen's passions ultimately proved his undoing. Observers say he became trapped in a web of regulations meant to protect Brazil against "biopiracy," loosely defined as the stealing of a country's genetic material or live flora and fauna. Brazil's determination to guard its natural resources dates back to the 19th century, when Sir Henry Wickham, a British botanist and explorer, smuggled out rubber-tree seeds to British Malaya and Ceylon and, as a result, precipitated the collapse of Brazil's rubber industry. Critics say the thicket of anti-piracy rules set up by the government has created frustration and fear in the scientific community. At a biologists' conference in Mexico this past July, 287 scientists from 30 countries signed a petition saying that van Roosmalen's jailing was "indicative of the trend of governmental repression in Brazil," and "will . . . have a deterrent effect on international collaborations between Brazilian scientists and their bio-partners worldwide." The petitioners called the sentence excessive and argued that "for a man of Dr. van Roosmalen's age, temperament and condition [it] is tantamount to a death sentence." One of the scientists told the *New York Times*: "If they can get him on trumped-up charges, they can get any of us." The *Times* ran a report on van Roosmalen's incarceration last August, three weeks after he was released from jail on a habeas corpus ruling pending an appeal of his conviction.

"Amazonas is the Wild West, and van Roosmalen was one of the loudest voices against deforestation," says one American biopiracy expert who has followed the case closely. "He became a thorn in the side of local authorities." For their part, Brazilian officials insist that the punishment fit the crime. "Van Roosmalen had so many problems, so it was not possible to make the sentence soft," says Adilson Coelho Cordeiro, chief inspector in Manaus for IBAMA, Brazil's equivalent of the U.S. Fish and Wildlife Service. "Brazil followed the letter of the law."

Indeed, according to colleagues and family members, van Roosmalen's wounds were at least partially self-inflicted. They paint a portrait of a man whose pursuit of the wonders of nature led, as it did with zoologist Dian Fossey of *Gorillas in the Mist*, to an unraveling of his human relationships. Van Roosmalen, they say, repeatedly bent the rules and alienated politicians, peers and underlings. Then, as his life became engulfed in a nightmare of police raids, prosecutions and vilifications in the press, the scientist turned against loved ones as well. In the end, he found himself friendless, isolated and unable to defend himself—the lonely martyr that he has often made himself out to be. "These fantasies that everybody is out to destroy him, these things are only in his head," says Betty Blijenberg, his wife of 30 years whom he's now divorcing. "I would tell him to keep quiet, but he would never listen. And this created big problems for him."

Writer **JOSHUA HAMMER** *is based in Berlin. Freelance photographer* **CLAUDIO EDINGER** *works out of São Paulo.*

MAP: MIKE REAGAN

TIME
EARTH DAY
2000
HOW TO SAVE THE EARTH
And the HEROES FOR THE PLANET who are making it happen
EXCLUSIVE
An advance look at the U.N.'s new survey of the planet's health

In 2000, *Time* designated van Roosmalen a "Hero for the Planet." He began his fieldwork in Suriname (above) in 1976. There, amid jaguars, toucans and macaws, he says, you could "feel the breeze of evolution on your neck."

MARC VAN ROOSMALEN COLLECTION; ARTHUR HOCHSTEIN / TIME & LIFE PICTURES / GETTY IMAGES

I MET MARC VAN ROOSMALEN for the first time on a sultry November morning in the lobby of Manaus' Tropical Business Hotel, three months after his release from jail. The scientist had been keeping a low profile while waiting for his appeal to be heard by Brazil's high court, turning down interviews, but he had grown impatient and decided to break his silence. He even suggested that we spend several days on a friend's riverboat heading up the Rio Negro, to talk in privacy while immersed in the environment he loves.

Van Roosmalen walked into the hotel, an 18-story tower overlooking the wide Rio Negro, wearing a tattered T-shirt, jeans and hiking boots. He reminded me of an aging rock star venturing tentatively back on tour: his blond hair hung in a shag cut; a goatee and droopy blond mustache framed his drawn face; and a fine pattern of wrinkles was etched around his pale blue eyes. The trauma of his recent incarceration had not worn off. There was still a wounded-animal quality to the man; he approached me cautiously, holding the hand of Vivi, Antonia Vivian Silva Garcia, whose robust beauty only made her companion seem more hangdog. Van Roosmalen had begun seeing her in 2003, shortly after they met in a Manaus beauty salon owned by her brother; the relationship, revealed to van Roosmalen's wife by their 25-year-old son, Tomas, precipitated the breakup of his marriage and the disintegration of his personal life just as his career was falling apart. Van Roosmalen now clung to Vivi as his one unwavering source of support. He told me that she had brought him food in jail, found new lawyers for him and kept his spirits up when he was feeling low. "I owe her my life," he says.

As we sat in the hotel coffee shop sipping Guaraná, a soft drink made from the seed of an Amazonian fruit, van Roosmalen spoke ruefully about what he repeatedly called "my downfall." The Brazilian press, he said, "is calling me the 'biggest biopirate of the Amazon.'" He reached into a briefcase and extracted a photocopy of a letter he'd prepared for the press during his incarceration but hadn't made public until now. The handwritten screed called the cases against him, begun in 2002, a politically motivated "frame" job and

lashed out at the Brazilian government led by populist president Luiz Inácio Lula da Silva. "The best way to unite Brazil's masses is to create a common enemy that is easy to distinguish," van Roosmalen had written. "Who better to pick as a target, as a symbol of the biopiracy evil, than the Dutch gringo?" In the letter he questioned "whether I will get out of [jail] alive . . . to tell the world the truth." It was, I thought, exactly the kind of inflammatory document that would likely infuriate the very people he needed most—and undermine his efforts at exoneration.

The mood lightened a bit later, when, in the torpid heat of the Amazonian afternoon, we boarded the *Alyson*, a 60-foot riverboat, for our three-day journey up the Rio Negro and back. Van Roosmalen, Vivi and I stood at the stern of the vessel owned by their friend John Chalmers—an affable, beer-bellied expat from the British Midlands who'd left his tropical-fish business in his son's hands and settled in Manaus in 2002. Chalmers shouted orders in broken Portuguese to his three-man crew. The skyline of Manaus receded, and the vessel motored at eight knots past long sandy beaches (still studded with millennium-old pottery shards from the original Indians who lived on the banks) and unbroken jungle. It was the first time in several years, van Roosmalen told me, that he had ventured upriver.

Van Roosmalen (in a Rio Negro village last year) says he won't go back to jail.

Over the hum of the engine and the singsong Portuguese of Chalmer's Brazilian partner, Ana, the boat's cook, van Roosmalen provided an enthusiastic commentary on the world around us. "The banks here are all covered in *igapó* forest," he said—tough, willow-like trees genetically adapted to survive in an environment that lies underwater four to six months of the year. We were motoring, he pointed out, past some of the most pristine rain forest left in Brazil: almost all of Amazonas state's jungle is still standing, in contrast to those of other Amazon states, which have steadily been cut down to make way for soybean and sugar plantations. "But all this is now at risk," he said. Two years ago, devastating forest fires ignited all over the Amazon, including around Manaus, casting a gray pall over the city and burning for two weeks before dying out. "Every year, because of global warming, the dry season is starting earlier and becoming more prolonged," he said. "If we have two straight years like 2005, when the slash-and-burn fires went out of hand, then it's quite possible that huge tracts of the rain forest will never come back."

VAN ROOSMALEN'S early years gave little hint of the mess his life would become. He grew up in Tilburg in southern Holland, where his father was a chemist; the family took road trips across Europe every summer—visiting museums, exploring forests and beaches. "My brother and I were ornithologists, and we caught snakes and amphibians, took them home and put them in aquariums. And I always had a dream to keep a monkey as a pet," van Roosmalen told me. It was early evening, and we had cruised to the far side of the river, laying anchor at the mouth of a 25-mile-long channel that joined the nutrient-rich Amazon to the Rio Negro, a "black water" river low on nutrients and thus nearly devoid of animals and insects. In the still of the mosquito-less night, Ana carried platters heaped with shrimp and rice to the top deck, where we sipped iced caipirinhas, Brazil's national drink, and listened to the splash of a lone flyingfish in the bathlike water.

At 17, van Roosmalen began studying biology at the University of Amsterdam, moved into a houseboat on a canal and filled it with lemurs from Madagascar, South American spider monkeys and marmosets he'd purchased in a neighborhood pet shop. (This was well before the 1975 Geneva Convention declared that all primates were endangered species and made their trade illegal.) "I built another room for my monkeys, and I had no real neighbors, otherwise it would have been difficult, with the monkeys escaping all the time," he said. In 1976, with his young wife, Betty, a watercolorist and animal lover he'd met in Amsterdam, and infant son, Vasco, van Roosmalen set off to do doctoral fieldwork on the feeding patterns of the red-faced black spider monkey in the jungles of Suriname, a former Dutch colony in the northeast of South America.

Betty Blijenberg remembers their four years in Suriname—"before Marc became famous and everything changed"—as an idyllic period. The couple constructed a simple house on Fungu Island deep in the interior; van Roosmalen left the family at home while he ventured alone for months-long field trips around the Voltzberg, a granite mountain that rises above the canopy and affords a unique view of the top of the rain forest. "You could feel the breeze of evolution in your neck there," he now recalled. In a pristine jungle replete with jaguars, toucans, macaws and various species of primates, the young primatologist lived alongside a troop of spider monkeys, often eating the fruits that they left behind in the forest. He survived two near-fatal bouts of malaria and a paralyzing spider bite, which put an end to his walking barefoot down jungle trails. Van Roosmalen came to see the fruit-eating spider monkeys as a key link in the evolutionary chain—a

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Before his arrest, van Roosmalen (with Vivi last November) championed rain forest preserves. "You have to see the Amazon basin as an archipelago with islandlike areas," he argues. "It's like the Galápagos. Each island has its own ecological evolution."

highly intelligent creature whose brain is imprinted with the complex fruiting and flowering cycles of at least 200 species of trees and lianas (tropical vines). "The spider monkeys are the chimps of the New World," he told me. After two years of work in French Guiana, van Roosmalen collated his research into a groundbreaking book, *Fruits of the Guianan Flora*, which led in turn to his being hired in 1986 by the Brazilian Research Institute for the Amazon (INPA), the country's leading scientific establishment in the Amazon, based in Manaus.

There van Roosmalen initially thrived. With his good looks, boundless energy, high ambition, prolific publishing output and talent for mounting splashy field trips funded by international donors, he stood out in an institution with its share of stodgy bureaucrats and underachievers. He launched a nongovernmental organization, or NGO, dedicated to carving out wilderness preserves deep in the Amazon and, initially with the backing of officials at IBAMA, began caring for orphaned baby monkeys whose parents had been killed by hunters; he ran a monkey breeding and rehabilitation center in the jungle north of Manaus, then began operating a smaller facility in his own Manaus backyard. Even after Brazil tightened its laws in 1996, mandating an extensive permitting process, van Roosmalen says IBAMA officials would often bring him orphaned animals that they had retrieved from the jungle.

Eventually, however, van Roosmalen's iconoclastic style bred resentment. In a country where foreigners—especially foreign scientists—are often regarded with suspicion, his pale complexion and heavily accented Portuguese marked him as an outsider, even after he became a naturalized Brazilian citizen in 1997. Colleagues were irked by van Roosmalen's habit of failing to fill out the cumbersome paperwork required by the institute before venturing into the field. They also questioned his methodology. For example, says Mario Cohn-Haft, an American ornithologist at INPA, he often based his findings of a new species on a single live, orphaned monkey, whose provenance could not be proved and whose fur color and other traits might have been altered in captivity. Louise Em-

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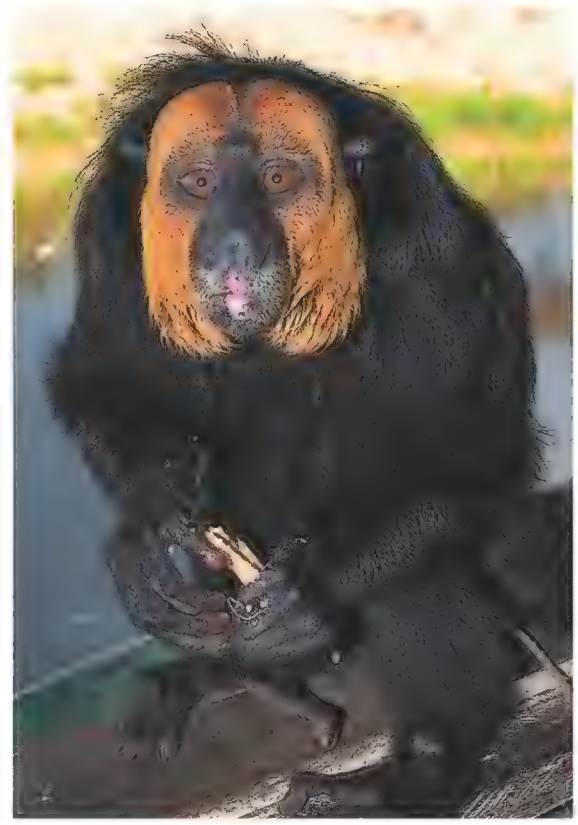
mons, an adjunct zoologist at the Smithsonian Institution, characterizes van Roosmalen's discovery of a new species of peccary as "not convincing scientifically," and Smithsonian research associate Daryl Domning questions his "discovery" of a dwarf manatee on an Amazon tributary. "There's no doubt at all in my mind that his 'new species' is nothing but immature individuals of the common Amazonian manatee," says Domning. "This is even confirmed by the DNA evidence he himself cites."

But Russell Mittermeier, the founder and president of Conservation International, an environmental organization based in metropolitan Washington, D.C., holds van Roosmalen in high professional regard. "There is nobody in the world who has a better understanding of the interaction between forest vertebrates—especially monkeys—and forest plants," says Mittermeier, who spent three years with van Roosmalen in Suriname in the 1970s. "Marc's discoveries of new species in the Amazon are exceptional, and his knowledge of primate distribution and ecology in the Amazon is excellent."

Van Roosmalen also attracted scrutiny by offering donors, through his Web site, the opportunity to have a new monkey species named after them in exchange for a large contribution to his NGO. In recognition of Prince Bernhard's efforts on behalf of conservation, van Roosmalen decided to call an orange-bearded titi monkey he'd discovered *Callicebus bernhardi*. The prince made a sizable contribution. Although the practice is not uncommon among naturalists, colleagues and officials accused van Roosmalen of profiting improperly from Brazil's natural patrimony. Van Roosmalen used the funds he had raised to purchase land deep in the jungle in an attempt to create a Private Natural Heritage Reserve, a protected swath of rain forest, but IBAMA refused to grant him the status; some officials at the agency charged that he planned to use the park to smuggle rare monkeys abroad. Van Roosmalen shrugged off the criticism and ignored warnings from



Van Roosmalen had high hopes that a captive saki monkey he'd heard of (above) would turn out to be a new species.

friends and family members that he was setting himself up for a fall. "In the best light he was naive, he didn't seem to know how to protect himself," says Cohn-Haft, who arrived at INPA about the same time as van Roosmalen. "In the worst light he was stepping on people's toes, pissing people off and getting himself in trouble. Some people saw him as doing sloppy science, others as arrogant, and [his attitude was], 'to hell with all of you, let me do my work.'"

LATE ON THE MORNING of our second day on the Rio Negro, under a broiling sun, van Roosmalen steered a skiff past leaping pink river dolphins, known as botos. After years of enforced inactivity, the naturalist was unofficially back in the role he loved, chasing down leads from locals in pursuit of potential new species. An hour earlier, van Roosmalen had heard rumors in an Indian village about a rare, captive saki monkey with distinctive fur and facial patterns. "We've got to find it," he'd said excitedly. Each new species he discovered, he explained, provided more support for the "river barrier" hypothesis proposed by his hero, famed Amazon explorer Alfred Russel Wallace, in 1854. "You have to see the Amazon basin as an archipelago—a huge area

with islandlike areas, cut off genetically from one another," van Roosmalen had told me earlier, expounding on his favorite scientific theme. "It's like the Galápagos. Each island has its own ecological evolution."

The skiff docked beside a riverside café, and we climbed out and followed the proprietor, a stout, middle-aged woman, into a trinket shop in back. Tied up by a rope was one of the oddest creatures I'd ever seen: a small, black monkey with a black mane that framed a peach-colored face shaped like a heart, with a sliver of a white mustache. Van Roosmalen beckoned to the saki monkey, which obligingly leapt onto his shoulder. The naturalist gazed into its face and stroked its mane; the saki responded with squeaks and grunts. "If you come onto these monkeys in the forest they freeze, and they don't come to life again until you leave the area," he said, studying the saki admiringly. Van Roosmalen paused. "It's an orphan monkey that somebody brought here," he said. "It's not like Africa. They don't put the baby in the pot with the mother, they sell it." The saki grabbed van Roosmalen's necklace made of palm-seeds and used its sharp canines to try to break open the rock-hard nuggets, gnawing away for several minutes without success.

Van Roosmalen was disappointed: "This saki should be distinct, because it's such a huge river, but it looks superficially like the male population on the other side of the Rio Negro," he said. Perhaps local Indians had introduced the Manaus saki monkeys to this side of the Rio Negro long ago, and the animals had escaped and carved out a new habitat. He conferred with the monkey's owner, who rummaged through the monkey's box filled with shredded paper and came up with a handful of dried brown fecal pellets. Van Roosmalen stuffed the pellets into the pocket of his cargo pants. "I'll run a DNA sampling when we get home," he said, as we climbed back into the skiff and sped back toward the *Alyson*.

IT WAS ON an excursion not so different from this one that van Roosmalen's

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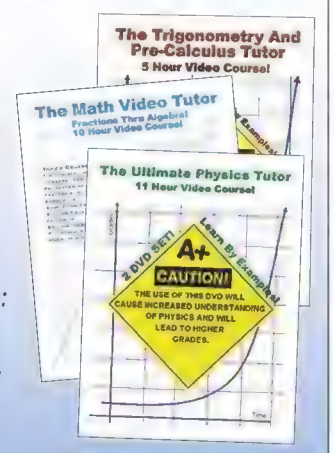
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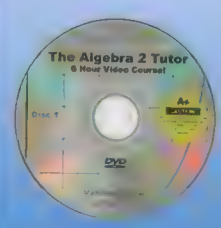

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career began to self-combust. On July 14, 2002, van Roosmalen told me, he was returning from a jungle expedition aboard his research vessel, the *Callibella*, when a team of Amazonas state agents boarded the boat. (Van Roosmalen said he believes they were tipped off by a jealous colleague.) The authorities seized four baby orphaned monkeys that van Roosmalen was transporting back to his Manaus rehabilitation center; the scientist lacked the necessary paperwork for bringing the monkeys out of the jungle but believed he had properly registered the research project years earlier. Van Roosmalen was accused of biopiracy, and interrogated during a congressional investigation. At first, recalls son Vasco, 31, INPA's director rushed to his defense: then, "Marc started criticizing his INPA colleagues in the press, saying 'everybody is jealous of me'—and INPA's defense faltered." Van Roosmalen's bosses at INPA convened a three-man internal commission to investigate a host of alleged infractions. These included illegal trafficking in animals and genetic material, improperly auctioning off the names of monkey species to fund his NGO and failing to do the mandatory paperwork in advance of his field research.

In December 2002, Cohn-Haft circulated among his colleagues a letter he had written in support of van Roosmalen, accusing the press and the INPA administration of exaggerating his offenses. "I thought there would be a wave of solidarity, and instead I saw very little response," Cohn-Haft told me. "People said, 'Don't put your hand in the fire for this guy. It's more complicated than you think.'" Months later, two dozen IBAMA agents raided van Roosmalen's house, seizing 23 monkeys and five tropical birds. Van Roosmalen was charged with keeping endangered animals without a license—despite the fact, he argued, that he had applied for such a permit four times in six years without ever receiving a response. Cohn-Haft calls IBAMA's treatment of him unfair. "Marc really cares about these creatures," he says. "If you are receiving monkeys from the same agency that is giving out permits, you figure that these people aren't going

to stab you in the back." Four months later, on April 7, 2003, van Roosmalen was fired from his INPA job.

Abandoned by the research institute that had supported him for years, van Roosmalen told me that he then found himself especially vulnerable to Brazilian politicians and prosecutors. He was accused of theft and fraud in a 1999 arrangement with a British documentary production company, Survival Anglia, to import five tons of aluminum scaffolding for use on a jungle film project. To qualify for a waiver on import duties, the company had registered the scaffolding as the property of INPA; but then, the authorities charged, van Roosmalen illegally used it after the films were shot to make monkey cages for his breeding center. Russell Mittermeier and other influential U.S. scientists urged van Roosmalen to accept a deal they heard the Brazilian authorities were proffering. Recalls Vasco: "INPA would receive the [confiscated] monkeys and my father would cede the cages that were made of parts of the scaffolding. But he ignored that deal, he continued to criticize IBAMA, and everybody else."

It was about this time, according to van Roosmalen, that his younger son, Tomas, told his mother about the photographs of Vivi. Shortly after, van Roosmalen moved out of the house. At almost the same time, the board of van Roosmalen's NGO, which included the three members of his immediate family and four native-born Brazilians, voted to remove him as president, citing such administrative irregularities as his failure to submit financial reports. The board seized the NGO's bank account, research vessel and Toyota Land Cruiser. "We went by the book," says one board member.

Ricardo Augusto de Sales, the federal judge in Manaus who handed down the June 8 verdict against van Roosmalen, imposed, says van Roosmalen, the harshest possible punishment: two years for holding protected species without a permit, and 12 years and 3 months for "appropriating" Brazil's "scientific patrimony" (the scaffolding) and using it for "commercial gain." According to Vasco, his father's lawyer had not been paid in years and thus provided no defense. "All [the judge] had was the prosecutor's version." (Van Roosmalen's attorney declined to comment.)

After van Roosmalen went to jail, says Vasco, his wife and Marc's eldest brother, who had come from Holland to help, rushed to Manaus to hire new lawyers and try to get him freed pending an appeal; Vivi also brought lawyers, who, according to Vasco, submitted "a hastily written, one-page appeal" to the high court in Brasilia, the capital. At the same time, Betty Blijenberg, who had done social work for five years at the jail and knew the staff, begged the director to move her husband to a solitary cell. "I knew he was in danger, they were going to kill him, he couldn't defend himself. I asked him, 'Why is he there? Why is he not in a separate cell?' The director said, 'There's nowhere else to put him.'" Van Roosmalen believed he was in grave peril: he says he was told that inmates had purchased crack cocaine from the jailhouse "sheriff," a convicted murderer, paying for it by "billing" van Roosmalen's prison "account." He was also told that he needed to come up with about $1,000 to pay off the debt or he would be killed; van Roosmalen's attorneys ultimately lent him the cash. After one month, his attorneys managed to get him moved to a military garrison while Judge de Sales was on holiday; but after five days, the judge returned and ordered him back to the public jail, arguing that van Roosmalen was not entitled to privileged treatment. Fifty-seven days into his ordeal, with the Brazilian government under pressure from the Dutch Foreign Ministry, the scientific establishment and the international media, a federal court in Brasilia set van Roosmalen free.

Vasco traces his father's downfall to "a number of disconnected actions by individuals, rather than a big conspiracy." Cohn-Haft agrees. "It's not *The Pelican Brief*," he says. "It's about a bunch of crappy people finding someone they can pick on and picking on him. We're talking hubris on his side. He really thinks that he's some kind of savior. And on the other side, he's being made out to be an enormous villain. And both versions are exaggerated."

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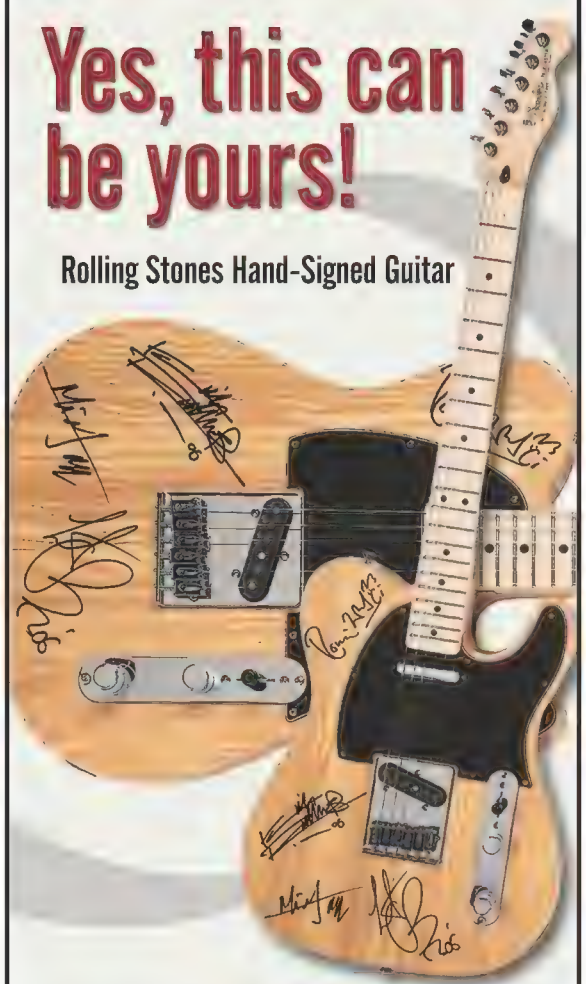

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But in Marc van Roosmalen's eyes, a vast array of enemies, including his immediate family, are all out to get him. On our final evening on the Rio Negro, the scientist sat at the dinner table on the boat's main deck, his haggard face illuminated by fluorescent lights, and laid out how his foes sought to "get me out of the way" because "I know too much" about corruption and the efforts of big Brazilian interests to destroy the Amazon rain forest. Eyes widening, he singled out his son Vasco as a prime perpetrator. Driven by an "Oedipus complex" and his desire to ingratiate himself with the Brazilian government, van Roosmalen claimed, Vasco had engineered his removal from the NGO, stolen his boat and car and tried to force him to hire a criminal attorney who would deliberately lose the case. "He wanted me to die in prison," van Roosmalen said. He accused his wife, Betty, of conspiring with IBAMA to have him arrested in revenge for his extramarital affair; he lashed out at his former colleagues at INPA as "scavengers." Fellow scientists such as Russell Mittermeier had "turned their backs on me" to protect their own ventures in the rain forest. "They have lots of money at stake," he said. As van Roosmalen ranted on into the night, I had the feeling that I was sitting in some Brazilian version of Joseph Conrad's *Heart of Darkness*. Isolated in the middle of the Amazon jungle and under continuous attack for years, it seemed to me quite possible that the scientist had been infected by a touch of madness. His two months of hell in the Manaus jail, I thought, must have confirmed all of his suspicions about plots and vendettas. Who among us, I wondered, thrown into the same nightmare, could resist finding a common thread of conspiracy winding through our troubles?

THE NEXT MORNING, our last on the Rio Negro, the crew anchored the boat at the base of a cliff, and van Roosmalen, Vivi and I climbed a steep wooden staircase to a nature camp at the edge of the jungle. With a local guide and his two mangy dogs leading the way, we followed

a sinuous trail through terre firma vegetation: primary rain forest that, unlike the igapó we'd been exploring, sits high enough above the river to avoid submersion during the rainy season. Van Roosmalen pointed out lianas as thick as large anacondas, and explained how these and other epiphytes (flora, in this setting, that live on other plants in the forest canopy) function as giant vessels for capturing carbon dioxide, and thus play a vital role in reducing global warming. "The total surface of leaves in a rain forest is a thousand, maybe even a million times bigger than the monoculture they want to convert the Amazon into," he told me. Farther down the jungle trail, he showed me a dwarf species of palm tree that captures falling leaves in its basketlike fronds; the decomposing material scatters around the base of the tree and fortifies the nutrient-poor soil, allowing the palm to thrive. "Every creature in the rain forest develops its survival strategy," he said.

Van Roosmalen's own survival strategy had proved disastrously unreliable up to now; but he said he was confident that everything was going to work out. As we walked back through the forest toward the Rio Negro, he told me that if the high court in Brasilia found him innocent, he would sue INPA to get his old job back and try to pick up his old life. If the high court upheld all or part of the sentence, there was "no way" that he would return to jail. Although the Brazilian police had frozen his bank account and seized his Brazilian passport to prevent him from fleeing the country, van Roosmalen assured me, without going into detail, that he had a contingency escape plan. He had job offers waiting for him at academic institutions in the United States, he said. Perhaps he would go to Peru to search for the next Machu Picchu. "I've seen the Landsat pictures, and I know it's out there," he told me. "I'll be the one to find it." We reached the river and climbed aboard the *Alyson*. Van Roosmalen stood at the railing as the boat puttered downstream, carrying him away from his brief jungle idyll, back toward an uncertain future.

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SMITHSONIAN; February 2008; Volume 38, Number 11
SMITHSONIAN (ISSN 0037-7333) is published monthly by Smithsonian Business Ventures, 600 Maryland Ave. S.W., Suite 6001, Washington, D.C. 20024. Periodical postage paid at Washington, D.C. and additional mailing offices. POSTMASTER: send address changes to Smithsonian, P.O. Box 420312, Palm Coast, FL 32142-0312. Printed in the USA. Canadian Publication Agreement No. 40043911. Canadian return address: Brokers Worldwide, PO Box 1051, Fort Erie, ON L2A 6C7.

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TERENCE WITT

Theoretical physics has been hopelessly stalled for over 30 years. Moribund. Ossified. The Standard Model of particle physics uses over 20 ad hoc constants, and no one knows why they are necessary or why they have the values they do. Quantum physics and general relativity remain utterly incompatible. Cosmologists haven't the foggiest idea what could have caused the Big Bang or what, if anything, came before it. And finally, after over 30 years of effort, string theory hasn't even achieved the status of *science*.

There is a very simple reason for this catastrophic, intractable mess. Theorists stopped asking *why* a long time ago. Without the *why*, the search for mathematical symmetries becomes numerology, not science. No telescope or particle accelerator, regardless of its size, is going to tell us *why* the universe is the way it is. When the *why*'s remain unanswered, there is no understanding. When there is no understanding, there is no progress. But this sad situation is about to change forever.

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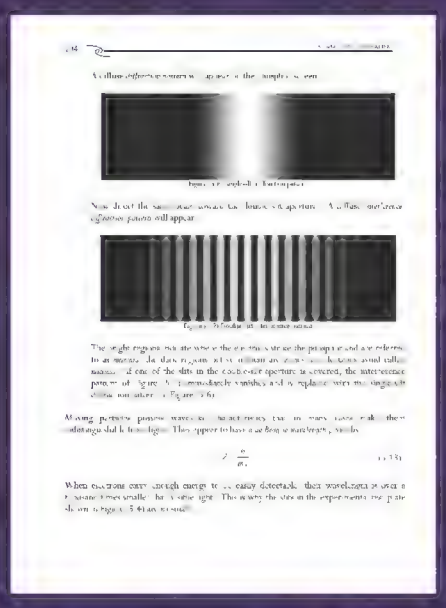

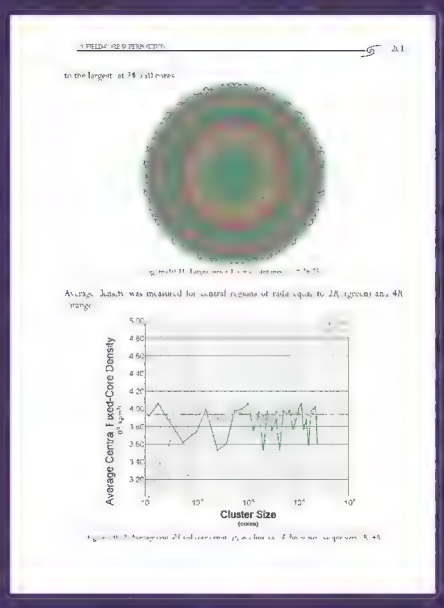

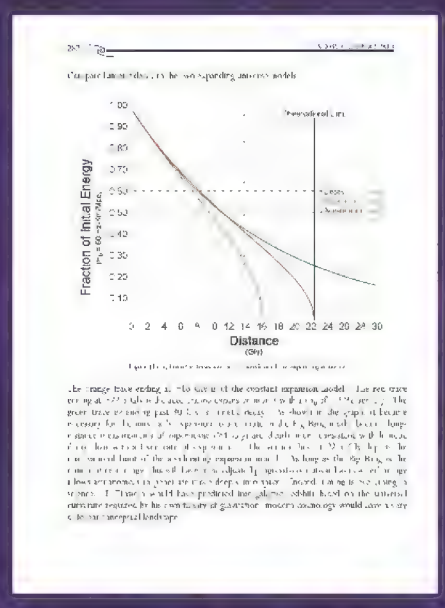

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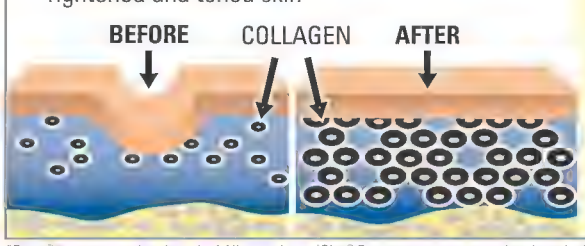

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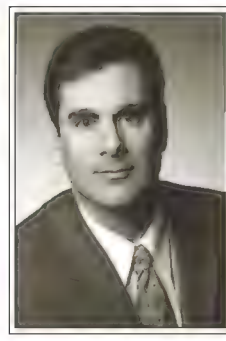

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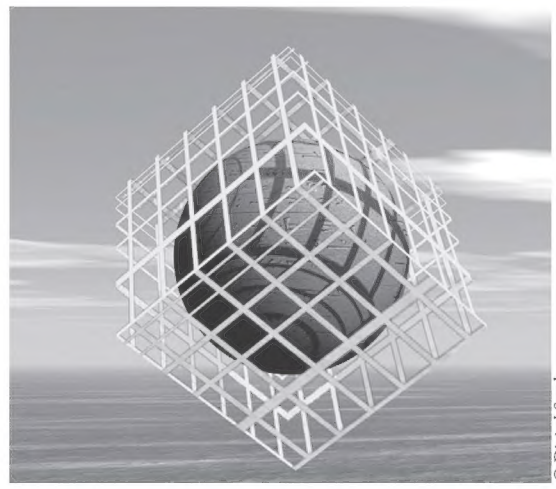
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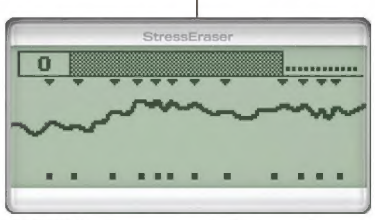

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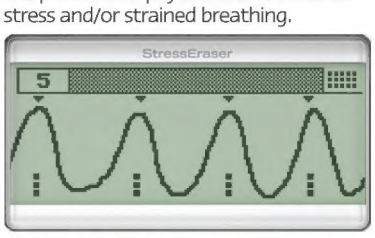

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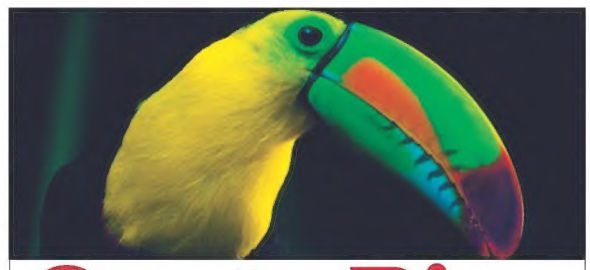

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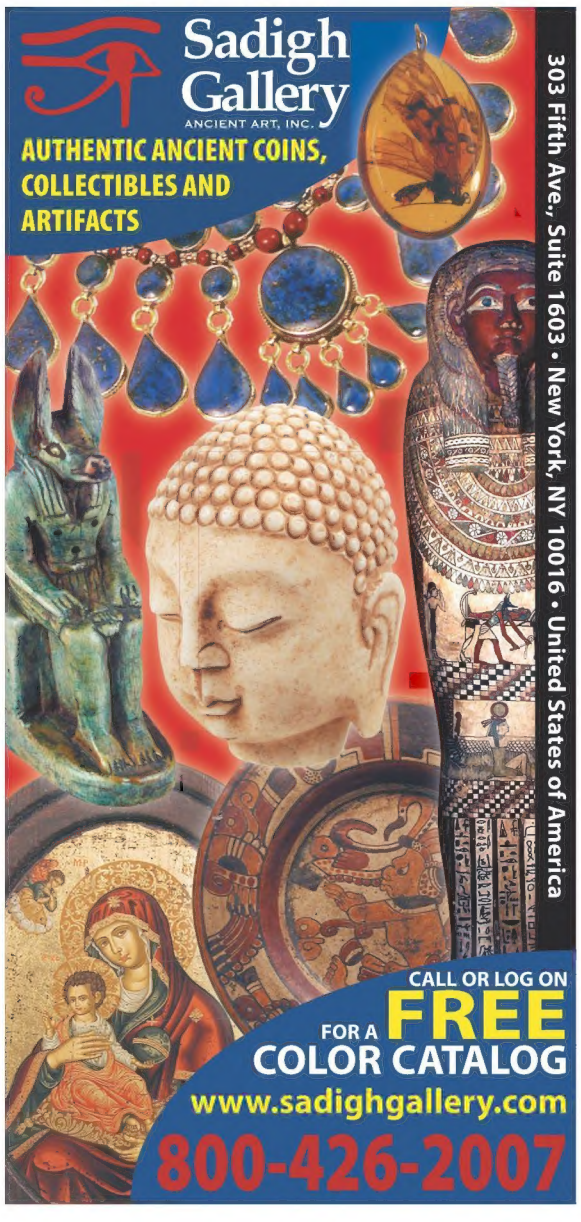
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Infinite Jest

Stop me if you've heard this one . . . **BY JUDITH STONE**

"**GUY GOES TO A PSYCHIATRIST,"** said a friend at dinner, interrupting an earnest discussion of HMOs. "Psychiatrist says, 'You're crazy.' Guy says, 'I want a second opinion.' Psychiatrist says, 'You're ugly, too.'" We chuckled politely. "The oldest joke in the world, and it still kills," the wag pronounced with authority. Wrong on both counts, I thought. No threat of fatal hilarity here; and the oldest joke in the world? Hardly. Henny Youngman, the gag's putative progenitor, roamed the savanna only recently—between 1906 and 1998, the Late Hellaceous period. I began to wonder whether any single joke could be definitively declared as old as the hills and demonstrably twice as dusty—and resolved to find out.

A bit of research quickly eliminated several possibilities. The classic riddle involving strolling poultry was first cited in the March 1847 issue of *Knickerbocker, or New York Monthly Magazine*. In 1739, *Joe Miller's Jests* made olde England merry. (A sample Miller-Time rib tickler: "A famous teacher of Arithmetick, who had long been married without being able to get his wife with child: One said to her, 'Madam, your husband is an excellent Arithmetician.' 'Yes,' replies she, 'only he can't multiply.'" Ba-da-bum!)

A century and a half before that, Shakespeare alluded in his plays to much earlier joke books. All of them seem to have disappeared, except for a 1484 translation of excerpts from an Italian volume, the *Liber Facetiarum (Book of Humor)*, a collection of 273 "jocose tales" in Latin compiled by scholar and papal secretary Gian Francesco Poggio Bracciolini. (A mild taste of the less-than-divine comedy: A monk comforts an ill man saying that God inflicts misfortune on those he loves. The patient responds, "I am not surprised that God has so few friends; if He treats them in this manner, He will have even less.")

More ancient still is a collection that scholars declare to be the world's oldest surviving joke book. *The Philologos*, or *Laughter Lover*, is a Greek anthology from the fourth or fifth century A.D. Its more than 200 jokes are divided into categories—the largest of which is devoted to *scholastikos* (scholars), or eggheads. ("A young egghead sold his books when short of money. He then wrote to his father, 'Congratulate me, father. I am already making money from my studies!'") The Greek historian Athenaeus mentions a still-earlier anthology of witticisms commissioned by Philip of Macedon in the third century B.C., but no trace remains. Thus ended the trail.

But then a solid candidate for the title of first recorded jest, the ur-gag, emerged. "Found: the oldest joke in the world," read the headline in the *Sunday Times* of London on June 29, 1997. Inscribed on a roll of papyrus, the hoary jape could be translated as a riddle: "How do you entertain a bored pharaoh? You sail a boatload of young women dressed only in fishing nets down the Nile and urge the pharaoh to go catch a fish."

I guess you had to be there (in 2600 B.C., when King Snefru received this wink-wink nudge-nudge advice from the court magician Djadjamankh.) Or perhaps it was funnier in the original hieroglyphic. (Asp jackal ibis? Wiggly line, ankh, feather!)

Carol Andrews, formerly of the Egyptian antiquities department of the British Museum, and now a lecturer at the University of London, notes that the ancient Egyptians were amused by nudity, drunkenness, slapstick and political satire. The magician's sly suggestion appears within a political treatise; the fishing trip precipitates a convoluted narrative meant to underscore the cosmic inevitability of the new dynasty's rule. Andrews says Djadjamankh's advice was probably meant as droll social commentary. Still, she concedes that the quip could reasonably be considered the world's first recorded joke. It's 4,608 years old—but still sounds so fresh you'd swear it is only 4,607.

JUDITH STONE*'s most recent book,* When She Was White: The True Story of a Family Divided by Race, *will be published in paperback this year by Hyperion.*

RICHARD THOMPSON